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BEST CHOICE

PRELIMS

POLITY & GOVERNANCE

Ladakh Autonomous Hill Development Council (LAHDC)	**Context:** Recently, Union Minister for Heavy Industries Dr Mahendra Nath Pandey had a meeting with **Ladakh Autonomous Hill Development Council (LAHDC)** and Commerce and Industry Chamber at Leh and reviewed the industry sector. **About Ladakh Autonomous Hill Development Council (LAHDC):-** • It is an **autonomous district council** that **administers the Leh district of Ladakh.** • **Establishment:** The council was created under the **Ladakh Autonomous Hill Development Council Act of 1995.** • **Composition:** LAHDC-Leh has 30 **seats and the government nominates four councilors**. • **Working**:- o The autonomous hill council work with village panchayats to take decisions on economic development, healthcare, education, land use, taxation, and local governance. o These decisions are further **reviewed at the block headquarters** in the presence of the **chief executive councilor and executive councilors.** • Leh, which is a Buddhist-dominated district of Ladakh, has demanded the implementation of the **sixth schedule** for the Union territory to guard against demographic change and dilution of the unique cultural and tribal identity. **About Ladakh** • Ladakh is one of the most **sparsely populated regions in Jammu and Kashmir.** • It is the **highest plateau** in the State of Jammu & Kashmir. • **Population:** The biggest ethnic group is **Buddhist having 77.30% of the population** followed by **Muslims with 13.78% and Hindus with 8.16%.** **MUST READ: Ladakh Autonomous Hill Development Council (LAHDC), Leh** **SOURCE: AIR**
Jal Jeevan Mission	**Context:** Recent reports suggest that the Centre's **Jal Jeevan Mission** may miss the 2024 target. **About Jal Jeevan Mission:-** • **Launched in 2019.** • **Ministry: Ministry of Jalshakti. (JAL JEEVAN MISSION)** • It aims to **provide safe and adequate drinking water through individual household tap** connections to all households in rural India by 2024. • **Funding:** The fund-sharing pattern between the **Centre and states is 90:10** for Himalayan and North-Eastern States, 50:50 for other states, and 100% for Union Territories. **Objectives of JJM:-** • To provide **Functional Household Tap Connections (FHTC) to every rural household.** • To provide **functional tap connection** to Schools, Anganwadi centers, Gram Panchayat buildings, etc. • To **monitor the functionality** of tap connections.

- To promote and ensure **voluntary ownership among the local community** by way of contribution in cash, kind and/ or labor and voluntary labor.
- To assist in **ensuring the sustainability of the water supply system**, i.e. water source, water supply infrastructure etc.
- To **empower and develop human resources** in the sector such that the demands of construction, plumbing, electrical, water quality management etc.
- To bring **awareness on various aspects** and significance of safe drinking water and involvement of stakeholders in a manner that make water everyone's business

Components Under JJM:-
- **Development of in-village piped water supply infrastructure:** to provide tap water connection to every rural household.
- **Development of reliable drinking water sources**: to provide long-term sustainability of water supply system.
- **Bulk water transfer, treatment plants and distribution network**: to cater to every rural household.
- Technological interventions for **removal of contaminants** where water quality is an issue.
- **Greywater management:** Greywater is wastewater generated from activities such as washing dishes, doing laundry, and bathing.
  - It can be **treated and reused** for non-potable purposes such as flushing toilets, watering plants, or irrigating lawns.

SOURCE: HINDU

SWAMIH Fund	**Context:** Recently, the Prime Minister, Modi congratulated new homeowners in Bengaluru's first project under **Special Window for Funding Stalled Affordable and Middle-Income Housing Projects (SWAMIH) Fund.**
	
	About SWAMIH Fund:-
	• **Launched: 2019.**
	• It is a **social impact fund** specifically formed for completing stressed and stalled residential projects. (Pradhan Mantri Awas Yojana-Urban (PMAY-U))
	• **Sponsored by: Ministry of Finance, Government of India.**
	• **Managed by: SBICAP Ventures Ltd., a State Bank Group company.**
	• **Objective:-**to **provide priority debt financing for the completion of stalled housing projects** falling under the affordable and middle-income housing categories. (Urban Housing)
	• **Implementation of the scheme:** The fund was set up as a **Category-II AIF** (Alternate Investment Fund) debt fund registered with SEBI.
	   ○ **AIFs:** they are defined under the Securities and Exchange Board of India (Alternative Investment Funds) Regulations, 2012.
	   ○ AIFs created/funded under the Special Window **would solicit investment into the fund from the Government** and other private investors including cash-rich financial institutions, sovereign wealth funds, public and private banks, domestic pension and provident funds, global pension funds and other institutional investors.
	Eligibility criteria for funding:-
	• Real estate projects must be **registered under the Real Estate (Regulation and Development) Act (RERA) 2016.**
	• Project **must be classified as a non-performing asset (NPA)** or be under insolvency proceedings.

	• The project should have been **declared as a "stalled" or "delayed"** project by a competent authority.
	• The fund is available **only for projects that fall under the affordable and mid-income housing categories.**
	MUST READ: Social Stock Exchange
	SOURCE: PIB
Performance Grading Index for Districts (PGI-D)	**Context**: The **Performance Grading Index for Districts (PGI-D)** combined reports for 2020-21 and 2021-22 were released recently.
	About Performance Grading Index for Districts (PGI-D):-
	• **Released first: 2017-18. (Performance Grading Index)**
	• **By: Department of School Education and Literacy (DoSE&L), Ministry of Education.**
	• **Objective:** to help the Districts to prioritize areas for **intervention in school education** and thus improve to reach the highest grade.
	• The report the **performance of the school education system** at the District level **by creating an index for comprehensive analysis.**
	• 83-indicator-based **PGI-D** has been designed to grade the performance of all districts in school education.
	• **Significance:** The PGI-D is expected to **help the state education departments to identify gaps at the district level** and improve their performance in a decentralized manner.
	o The indicator-wise PGI score **shows the areas where a district needs to improve.**
	Methodology
	• The **PGI-D structure comprises of total weightage of 600 points across 83 indicators**.
	• These are grouped under six categories viz., **Outcomes, Effective Classroom Transaction, Infrastructure Facilities & Student's Entitlements, School Safety & Child Protection, Digital Learning and Governance Process.**
	• These categories are further divided into **12 domains.**
	• PGI-D **grades the districts into ten grades viz., Daksh and Akanshi-3.**
	o **Daksh:** it is the Highest achievable Grade for Districts scoring **more than 90%** of the total points in that category or **overall.**
	o **Akanshi-3**: The lowest grade in PGI-D, which is for scores **up to 10%** of the total points.
	PGI for districts report - 2020-21 & 2021-22
	• The Covid **Pandemic has affected the performance of districts** during 2020-21 to 2021-22 as compared to 2019-20.
	• **None of the districts** attained the **top two grades.**
	• **79 districts made consistent improvement** in PGI-D scores in the last 4 years.
	• In spite of the Covid pandemic at its peak in 2021-22**, 290 districts have made a notable improvement** in their performance when compared to 2019-20 (pre-pandemic) with 2021-22.
	• Overall, **194 districts have made grade level improvement** in 2021-22 as compared to 2018-19.
	MUST READ: Education & Aspiring India
	SOURCE: AIR

Tele MANAS	**Context:** The **Tele Mental Health Assistance and Networking across States (Tele MANAS)**, helpline has reached a significant milestone.

Background:-
- Over 200,000 calls received on the Tele-MANAS Helpline since its launch in October 2022.
- Over 42 functional Tele MANAS Cells across 31 States and UTs, the service is currently catering to 1,300+ calls per day in 20 languages.

About Tele Mental Health Assistance and Networking across States (Tele MANAS):-
- **Launched: 2022.**
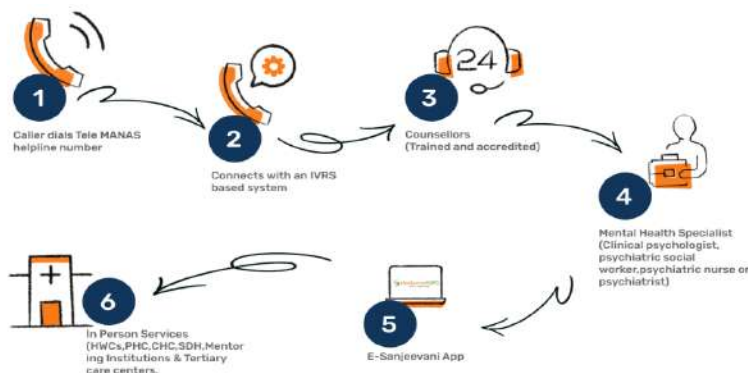
- **Ministry: Ministry of Health & Family Welfare.**
- Acknowledging the mental health crisis in the wake of the COVID-19 pandemic and an urgent need to establish a **digital mental health network** that will withstand the challenges amplified by the pandemic, the Government of India announced National Tele Mental Health Programme (NTMHP) in the **Union Budget 2022-23.**

Objectives of Tele MANAS:-
- To enable people to seek support for their mental health issues while maintaining the anonymity of the callers, thereby **reducing the stigma generally surrounding mental health issues.**
- To exponentially **scale up the reach of mental health services** to anybody who reaches out, across India, any time, by setting up a 24x7 tele-mental health facility in each of the States and UTs of the country
- To **implement a full-fledged mental health-service network** that, in addition to counselling, provides integrated medical and psychosocial interventions including video consultations with mental health specialists, e-prescriptions, follow-up services and linkages to in-person services.
- To **extend services to vulnerable groups of the population** and difficult-to-reach populations.

Salient Features of Tele MANAS:-
- Tele MANAS will be organized as a **two-tier system. (Tele-MANAS)**
- **Tier 1**: comprise the State Tele MANAS cells, which include **trained counsellors and mental health specialists.**
- **Tier 2:** comprise specialists at District Mental Health Programme (DMHP)/Medical College resources for physical consultation and/or e Sanjeevani for **audio-visual consultation.**
- **Toll-free helpline numbers:** 14416 or 1-800-891-4416 with multi-language provision allows callers to select the language of their choice for availing the services. (Address Stigma and Discrimination in Mental Health)

Eligibility:-
- **Any individual with mental health issues** can reach out to Tele MANAS services for help.
- **Family members of persons** with mental health issues can reach out for help.
- **Grass-root health care providers/community health providers** i.e., Accredited Social Health Activists (ASHAs), and community volunteers from the community can reach out to Tele MANAS on behalf of an individual or individuals in that community with mental health issues.

MUST READ: Need for stronger mental health strategy
SOURCE: PIB

INTERNATIONAL RELATIONS

| Unmanned Aircraft Systems and Innovative Air Mobility | **Context:** The **Directorate General of Civil Aviation (DGCA)** of India has recently signed a memorandum of understanding with the **European Union Aviation Safety Agency (EASA).** **Background:-**
 • The MoU is for cooperation in **Unmanned Aircraft Systems and Innovative Air Mobility.**
 • This MoU will facilitate collaboration on unmanned aircraft and innovative air mobility between the two civil aviation authorities.
 About the Collaboration on Unmanned Aircraft Systems and Innovative Air Mobility:-
 • This memorandum of understanding (MoU) will facilitate collaboration on **unmanned aircraft and innovative air mobility** between the two civil aviation authorities.
   o **Unmanned aerial vehicle (UAV):** it is commonly known, as a drone. It is an aircraft without any human pilot, crew, or passengers on board.
   o **Innovative air mobility (IAM)**: The concept of innovative air mobility (IAM) accommodates commercial and non-commercial operations with novel aircraft designs that **do not automatically fall under one of the known categories of aero planes or helicopters.** They may have the capability to vertically takeoff and land, have specific (distributed) propulsion features, may be operated in unmanned configuration, etc.
 • This collaboration would include cooperation between DGCA and EASA in the areas of development of **certification standards and environmental standards and related requirements** for the certification and use of unmanned aircraft systems and innovative air mobility operations which includes licensing of personnel, training, air traffic management and infrastructure, including Unmanned Aircraft System Traffic Management (UTM) standards and services.
 • The MoU will also ensure **regular information sharing between the two authorities** on the technological developments and research in this area and their respective strategies for outreach to relevant stakeholders.
 • Further, the MoU will result in **collaboration in conducting conferences, workshops, and training programs** by DGCA and EASA in this area.(DGCA)
 European Union Aviation Safety Agency (EASA)
 • EASA is an Agency of the **European Union (EU). (India-EU)**
 • It develops **common safety and environmental rules** at the European level.
 • **Objective:** to promote the highest common standards of safety and environmental protection in civil aviation.
 • **Established: 4 July 2018.**
 • **HQ: Cologne, Germany.**
 • It is headed by an **Executive Director**.
 • The work of the Agency is overseen by a **Management Board**, which represents **EU Member States and the European Commission.**
 • It is a body **governed by European public law**.
 • It is distinct from the Community Institutions (Council, Parliament, Commission, etc.) and has its own legal personality. |

	• **Exclusion:** EASA's remit does not encompass questions related to **civil aviation security e**.g. airport security measures, counter-terrorism. **MUST READ: Dornier aircraft** **SOURCE: AIR**

Japan-India Maritime Exercise 2023 (JIMEX 23)	**Context:** Recently, the seventh edition of the bilateral **Japan-India Maritime Exercise 2023 (JIMEX 23)** took place.
	 Background:-
	 • The event was **hosted by the Indian Navy** and is being conducted at/ off Visakhapatnam from 05 -10 July 2023.
	 • This edition marks the **11th anniversary of JIMEX**, since its inception in 2012**.**
	 About Japan-India Maritime Exercise 2023 (JIMEX 23):-
	 • **Background:** JIMEX, is a series of maritime exercises conducted by the **Indian Navy and the Japan Maritime Self-Defence Force (JMSDF).**
	      o It was **first commenced in 2012.**
	 • JIMEX 23 will witness the participation of**:-**
	 • **From Indian Navy:-**
	      o **INS Delhi:** India's first indigenously built Guided Missile Destroyer.
	      o **INS Kamorta**: an indigenously designed and built Anti-Submarine Warfare Corvette.
	      o INS Kamorta is a **Kamorta-class anti-submarine warfare corvette.**
	      o The Kamorta-class corvettes are designed to perform a range of naval operations**, including anti-submarine warfare, anti-surface warfare, and surveillance missions.**
	      o **Others**: a fleet tanker INS Shakti, a submarine, maritime patrol aircraft P8I and Dornier, ship-borne helicopters and fighter aircraft.
	 • **From JMSDF:-**
	      o It will be represented by the guided missile destroyer **JS Samidare** and its integral helicopters.
	 • It will take place in two phases:-
	      o **Harbour Phase**: at Visakhapatnam comprising professional, sports and social interactions.
	      o **After the Harbour Phase**: the **two navies will jointly hone their warfighting skills at sea** and enhance their interoperability through complex multi-discipline operations in the surface, sub-surface and air domains.
	 Other Exercises between India and Japan:-
	 • **Malabar:** India and Japan with the United States and Australia participate in the naval war-gaming exercise named Malabar. (26th Exercise Malabar)
	 • **SHINYUU Maitri** :Air Force
	 • **Dharma Guardian:** Military Exercise(Exercise IBSAMAR)
	 MUST READ: International Maritime Exercise/ Cutlass Express 2023 (IMX/CE-23) and INS Trikand
	 SOURCE: PIB

International Maritime Organization	**Context:** Recently, the summit of the United Nations **International Maritime Organization (IMO)** concluded in London. **Background:-** • Maritime countries upgraded their Greenhouse House Gas (GHG) emissions strategy to reach net zero "by or around" 2050 without specifying a definite year agreed to upgrade their Greenhouse House Gas (GHG) emissions strategy to reach net zero "by or around" 2050. **About International Maritime Organization:-** • IMO is the **United Nations specialized agency.**

	- **Establishment: 1948.**
	- **HQ: London, United Kingdom.**
	- **Objective:** to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and universally implemented.
	- **Membership:** IMO currently has 175 Member States and 3 Associate Members.
	    o **India** joined the IMO in **1959. (International Maritime Organization (IMO) & India)**
	- **Functions:-**
	    o Its role is to **create a level playing field** so that ship operators cannot address their financial issues by simply cutting corners and compromising on safety, security and environmental performance.
	- IMO's **work supports the UN Sustainable Development Goals (SDGs).**
	- The IMO is **not responsible for enforcing its policies.**
	- It has the responsibility for the **safety and security of shipping** and the **prevention of marine and atmospheric pollution by ships. (Maritime Security)**
	- **Key Conventions of IMO:**
	    o **International Convention for the Safety of Life at Sea (SOLAS)**
	    o **International Convention on Standards of Training, Certification, and Watch keeping for Seafarers (STCW)**
	    o **International Convention for the Prevention of Pollution from Ships (MARPOL)**
	MUST READ: Green Ports & Green Shipping in India
	SOURCE: DOWN TO EARTH

Muslim World League	**Context**: Recently, President Droupadi Murmu had a meeting with the Secretary General of the **Muslim World League**, at Rashtrapati Bhavan in New Delhi. **Background:-** - President Droupadi Murmu today said that India appreciates the role and objectives of the Muslim World League in promoting tolerant values, moderation of consciousness and inter-faith dialogue. - India is the country with the **second-largest population of Muslims in the world.** **About Muslim World League:-** - Muslim World League (MWL) is an international Non-governmental organization (NGO). - **Established: 1962.** - **Historical Background:** It was founded in accordance with a resolution adopted during the meeting of the General Islamic Conference, which was held in Holy Makkah on the 14th to the 18th **May 1962.** - **HQ: Makkah, Saudi Arabia.** **Objectives of the MWL:-** - **Introduce Islam** and its tolerant values as presented in the Holy Quran and the Sunnah. - **Consolidate the concepts of centrism and moderation** in the consciousness of the Muslim Ummah. o **Ummah**: a community of believers bound together with a common purpose, to worship God and with a common goal to advance the cause of Islam. - Strive to tackle and **resolve issues facing the Muslim Ummah**, and ward off factors causing conflict and discord. - Give **emphasis to civilizational rapprochement** and spread the culture of dialogue. - **Give importance to Muslim minorities** and their issues and **solve them within the constitutions and regulations** of the countries in which they are based.

- **Benefit from the Hajj season** by facilitating meetings among scholars, intellectuals and heads of organizations to provide scientific solutions to raise the standards of Muslims around the world. (GCC Trade pact)
  - o **Hajj:** an annual Islamic pilgrimage to Mecca, Saudi Arabia, the holiest city for Muslims
- **Preserve the Islamic identity of the Ummah,** strengthen its status in the world and make it more united.

Status of the MWL in international organizations:-
- **The United Nations Organization**: Observer in consultative status with the Economic and Social Council (ECOSOC).
- **Organization of the Islamic Cooperation:** Observe the status of attendance at all meetings and conferences.
- **UNESCO**: Member
- **UNICEF:** Member

MUST READ: Organisation of Islamic Cooperation (OIC)
SOURCE: AIR

Solomon Islands	**Context:** Recently, the Prime Minister of the **Solomon Islands** met Chinese leader Xi Jinping in Beijing.
	Background:-
	• Prime Minister Manasseh Sogavare met Chinese leader Xi Jinping and Premier Li Qiang.
	• Mr. Sogavare and Mr Li presided over the signing of agreements on police, economic and technical cooperation.
	About Solomon Islands:-
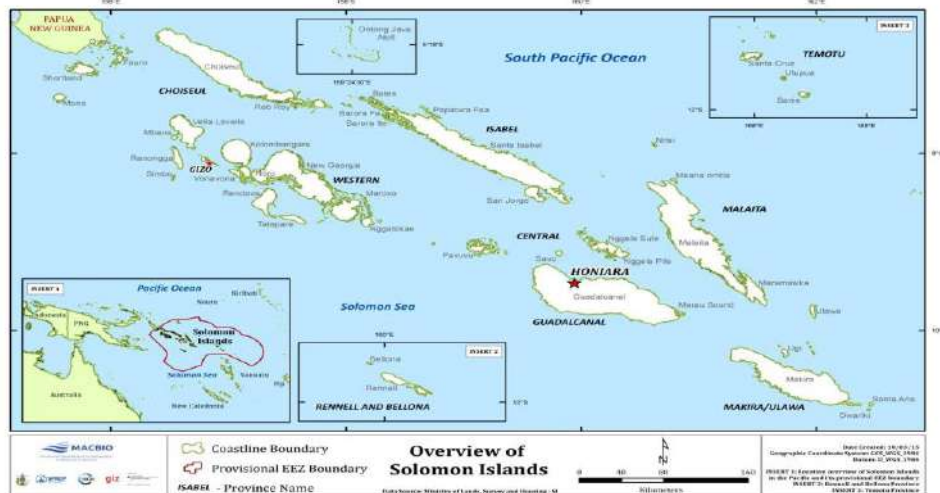	
	• Solomon Islands is a sovereign country consisting of **six major islands** and **over 900 smaller islands in Oceania. (Solomon Islands)**
	• **Location: southwestern Pacific Ocean.**
	   o The Solomon Islands is **part of the ethnically Melanesian group of islands** in the Pacific.
	   o It **lies between Papua New Guinea and Vanuatu.**
	• **Historical Background:** The islands, which were **initially controlled by the British Empire** during the colonial era, went through the hands of **Germany and Japan and then back to the U.K. after the Americans** took over the islands from the Japanese during World War II.
	   o The islands **became independent in 1978** to become a **constitutional monarchy under the British Crown**, with a parliamentary system of government.
	• **Capital: Honiara,** located on the largest island, **Guadalcanal.**

- **Population:** less than 700,000.

U.S.-China Rivalry in South Pacific:-

- Recently, China and the Solomon Islands have signed an inter-governmental framework agreement on security cooperation. (Solomon Islands and China Security Pact)
- The text of the pact has not been released publicly.
- However, the leaked document enables China to send its "**police, armed police, military personnel and other law enforcement and armed forces" to the islands** at the Solomon Island government's request, or if China sees that the safety of its projects and personnel in the islands are at risk.
- It also provides for **China's naval vessels to utilize the islands for logistics support**.
- There have been **speculations that China might be building its next overseas naval base in the Solomon Islands** after Djibouti.
- **Australia,** which has had a security agreement with Solomon since 2017, has been the most vocal critic of the agreement.
  - o It claimed it was concerned about the **lack of transparency with which this agreement has been developed,** noting its potential to undermine stability in our region.
- Other countries including the **US and New Zealand, have also voiced concern.**
- The **US has already announced its plans to reopen its embassy in Honiara** (Solomon Capital), which has been closed since 1993.
  - o The US State Department pointed out that the agreement could stir up instability in the Solomon Islands.
  - o US President Joe Biden convened a **summit of Pacific Island leaders** in September 2022 to unveil a strategy that included **cooperation in climate change, maritime security and preventing overfishing.**
  - o Biden also **promised $810 million in new aid for Pacific Island nations over the next decade**, including $130 million to address the effects of climate change.
- The Agreements signed by Solomon Islands and Chinese officials recently during the visit of Solomon Prime Minister Manasseh Sogavare include an implementation plan for **police cooperation** through 2025.

MUST READ: China's Security Pact with Solomon Islands
SOURCE: THE HINDU

Third G20 Sherpas Meet	**Context: The third Sherpas meeting** under India's G20 Presidency began in **Hampi**, Karnataka recently. **About G20 Sherpas:** • A Sherpa is a personal representative of the leader of a member country at an international Summit meeting such as the G20. • The Sherpa engages in planning, negotiation and implementation tasks through the Summit. • They coordinate the agenda, seek consensus at the highest political levels, and participate in a series of pre-Summit consultations to help negotiate their leaders' positions. • Sherpas are career diplomats or senior government officials appointed by the leaders of their countries. • There is only one Sherpa per Summit for each member country; he/she is assisted by several sous Sherpas. **G20 Sherpa Meeting under India's G20 Presidency:** • The former CEO of NITI Aayog, **Amitabh Kant** is the G20 Sherpa from India. • The 1st Sherpa Meeting of India's G20 Presidency was held on 04 December 2022, in Udaipur Rajasthan.

	- The Second G20 Sherpas meeting under India's G20 Presidency, chaired by India's G20 Sherpa Shri Amitabh Kant took place in the picturesque village of **Kumarakom, Kerala**, from March 30 to April 2, 2023. **G20:-** **Establishment: 1999. (G20)** **Members**: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the U.K., the U.S. and the European Union. **Presidency of the G20:** it **rotates every year** among members. - The country holding the presidency, together with the previous and next presidency-holder, forms the **'Troika'**. **India** assumed the presidency of the G20 grouping from Indonesia, in 2022 and will hold the post for a year. - During India's presidency, **India, Indonesia and Brazil** will form the troika. - The G20 **does not have a permanent secretariat or Headquarters.** **MUST READ: Kingdom of Vijayanagara** **SOURCE: AIR**
Maputo Protocol	**Context:** As per recent reports, the **Maputo Protocol** contributed towards Africa's progress in gender equality. **Key findings of the report:-** - There has been some **progress on gender equality in African countries** due to the Maputo Protocol, but it has been uneven, according to a new report. - The Protocol has a target of universal ratification in Africa **by 2028.** - However, with just five years until the target year**, there are still 12 countries that are yet to ratify this important legal instrument.** - There is an urgent need for **Botswana, Burundi, Central African Republic, Chad, Egypt, Eritrea, Madagascar, Morocco, Niger, Somalia and Sudan** to renew their commitments and ratify the Maputo Protocol in order to deliver on their promises to the women and girls in their countries. - Significant efforts have been made to promote gender equality under all the provisions of the Maputo Protocol, which include **advancing reproductive health and rights, facilitating equal access to and participation in political processes, promoting economic empowerment and ending violence against women.** - In the past two decades (2003-2022), in nearly all countries, **women's labour force participation rate (LFPR) as compared to that of men has remained low.** - In 24 countries, the share of women in the labour force has decreased. (Women Employment) **Women's economic rights and opportunities** and access to social welfare and protection are significantly **affected by external factors such as conflict, COVID-19**, the pandemic and climate change. - The **ripple effects of the COVID-19 pandemic have undone** the progress towards **ending child marriage.** - The pandemic had also **strained and pressured the existing public health systems.** - There has been an **improvement in women's participation in the political and decision-making processes**. **About Maputo Protocol:-** - It is an International human rights document for the **protection of women and girls in Africa.** **Adopted: July 2003.**

- **Adopted in Mozambique.**
- **Adopted by: African Union (AU).**
- **Ratification**: Of the 55 member states, **44 have ratified** or acceded to the Protocol.
- **Objective:** The Protocol requires the African States to **eliminate all forms of discrimination and violence against women** in Africa and to promote equality between men and women.
- **Significance:-**
    - o It is a comprehensive legal framework that **holds the African government to account in the event of a violation of women's rights.**
    - o It also gives women the **right to take part in political processes, social and political equality with men, improved autonomy in their reproductive health decisions, and an end to female genital mutilation.**
    - o The Protocol is considered **one of the world's most progressive legal frameworks** for women's rights.
    - o It is one of the **most ratified instruments** in the AU. (India-Africa: Challenges & Way Ahead)

MUST READ: Global Gender Gap Report 2021
SOURCE: DOWN TO EARTH

Sudan conflict	**Context:** Recent conflicts in **Blue Nile or Darfur regions** of **Sudan** has led to nationwide displacement.

About Sudan conflict:-

- The conflict in April 2023 is a **power struggle between** the two major factions of Sudan, which has led to the outbreak of violence.
- The ongoing struggle is between the paramilitaries of the **Rapid Support Forces (RSF) and the Sudanese military forces.**
- **Reason for conflict:-**
    o **2019**: The conflict in Sudan has its roots in the **overthrowing of long-serving President Omar al-Bashir by military generals in April 2019**, following widespread protests.
    o **2021:** The **military overthrew the transitional government led by Abdalla Hamdok** in October 2021, with **Burhan becoming the de-facto leader** of the country and Dagalo his second-in-command.
    - o The current fight is due to the **RSF supporting the former warlord Gen Mohamed Hamdan Dagalo**, also known as Hemedti, while the **Sudanese military forces supporting Gen Abdel Fattah al-Burhan**, who is the de facto ruler of the nation.
- **Current Impact of Conflict:-**
    - o It has resulted in millions of **internal and cross-border displacements**.
    - o Fighting initially took place in cities across **Northern and Khartoum states**, later spreading across the Darfur and Kordofan states. (Sudan's Darfur region)
    - o **Khartoum state** has been experiencing the **highest levels of internal displacement**.

India and Sudan conflict:-

- There are about 2,800 Indian nationals in Sudan, and there is also a settled Indian community of about 1,200 in the country.
- India began **Operation Kaveri in 2023. (Indian Naval Ship Airavat enters Port Sudan under Mission Sagar – II)**

	• **Operation Kaveri**: a codename for India's evacuation effort to bring back its citizens stranded in Sudan amid intense fighting between the army and a rival paramilitary force there. • The operation involves the deployment of the **Indian Navy's INS Sumedha**, a stealth offshore patrol vessel, and two Indian Air Force C-130J special operations aircraft on standby in Jeddah. **MUST READ: Sudan and Israel Agree to Normalise Relations** **SOURCE: DOWN TO EARTH**
BIMSTEC	**Context:** Foreign Minister S. Jaishanker recently attended the **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** retreat in Bangkok. **About the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC):-** • **Establishment:1997. (BIMSTEC)** • **HQ: Dhaka, Bangladesh.** • It is a regional organization that was established with the signing of the **Bangkok Declaration.** • Initially known as **BIST-EC (Bangladesh-India-Sri Lanka-Thailand Economic Cooperation).** • **1997:** It was renamed '**BIMST-EC**', following the inclusion of **Myanmar.** • **2004: Bhutan and Nepal** were admitted. • **Members: India, Bhutan, Bangladesh, Myanmar, Thailand, Nepal and Sri Lanka.** • The **BIMSTEC Charter** was signed and adopted during the '**Fifth BIMSTEC Summit**' held in the virtual format in **Colombo, Sri Lanka, in 2022.** • **Chairmanship**-the Chairmanship of BIMSTEC rotates according to the alphabetical order of the English names of the Member States. • **India hosted the first meeting of Governing Board** of BIMSTEC Energy Centre in **Bengaluru in 2023.** **Objectives of BIMSTEC:-** • To revive the Connectivity of the Bay of Bengal region. • To revive the focus on Blue Economy. • **Bridge between two sub-regions:** BIMSTEC not only connects South and South-East Asia but also the ecologies of the Great Himalayas and the Bay of Bengal. **Significance of BIMSTEC:-** • **Major Shipping route:** A fourth of the world's traded goods cross the Bay of Bengal every year. (BIMSTEC & Maritime Protection) • **Huge Market**: BIMSTEC grouping is home to around 1.5 billion people which constitute around 22% of the global population. • **High Growth Potential:** With a combined gross domestic product (GDP) of 3.8 trillion economy, BIMSTEC member States have been able to sustain an average 6.5% economic growth trajectory in the recent past. **MUST READ: SAARC** **SOURCE: AIR**

Mekong Ganga Cooperation (MGC)	**Context:** Recently, Foreign minister of India co-chaired the 12th **Mekong Ganga Cooperation (MGC)** meeting in Bangkok along with Foreign Minister of Laos.
	Background:-
	• In his opening remarks at the 12th Mekong Ganga Cooperation (MGC) Mechanism meeting, the Foreign Minister said the lower Mekong region holds immense significance for India both in a historic sense and a contemporary one.
	About Mekong Ganga Cooperation (MGC):-
	• **Launched: 2000.**
	• **HQ: New Delhi.**
	• **Naming:** The organization takes its name from the **Ganga and the Mekong**, two large rivers in the region.
	o The grouping was initially called **Ganga Suvarnabhumi Programme (GMSP).**
	• **Objective:** Both the Ganga and the Mekong are civilizational rivers, and the MGC initiative aims to facilitate closer contact among the people inhabiting these two major river basins.
	• **Members: India and five ASEAN countries, namely, Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam**
	• **Chairmanship:** The MGC meetings are co-chaired alternatively every year between India and one of the 5 Mekong countries.
	Areas of Cooperation:-
	• **Four foundational areas of cooperation: tourism, culture, education, and transport & communication.**
	• It has further expanded to include new areas like **health and traditional medicine, agriculture and allied sectors, small and medium enterprises, water resources management, science and technology, skill development, and capacity building.**
	Ministerial meeting:-
	• **1st MGC Ministerial meeting:** Vientiane,2000.
	• **12th MGC Ministerial meeting**: Thailand, 2023. (BRICS – 14th Summit)
	MUST READ: India-Vietnam relations
	SOURCE: THE HINDU
Black Sea Grain initiative	**Context:** Recently, India has voiced support for the **UN's efforts** in continuing the **Black Sea Grain initiative**.
	Background:-
	• India's reaction came after **Russia announced it was terminating** the implementation of the UN-brokered deal that allowed the export of grain and related foodstuffs and fertilizers from Ukrainian ports.
	About the Black Sea Grain initiative:-
	• **Signed in 2022. (Black Sea Grain Initiative)**
	• **Signed at Istanbul.**
	• The deal, brokered by the **United Nations (UN) and Turkey**.
	• **Objective:** to limit food price inflation emanating from supply chain disruptions because of Russian actions in the world's 'breadbasket' by ensuring an adequate supply of grains.

- **Time Period:** Initially it was stipulated for a period of **120 days**.
- It was to **provide a safe maritime humanitarian corridor for the Ukrainian export** of food grains.

Need for the deal:-

- **Ukraine is one of the world's largest grain exporters**.
- However, **since Russia invaded Ukraine**, **exports** of grain, food and fertilizers from both countries have been **significantly hit. (UPSC CSE: Russia-Ukraine War.)**
- The **disruption in supplies** resulted in **rising prices.**
- This **added to the burden** of an already existing **food crisis in some countries.**
- In a bid to address this crisis and ensure the smooth movement of supplies amidst the ongoing war, the United Nations and Turkey brokered the Black Sea Grain Initiative on 22 July 2022.
- The central idea was to calm markets by **ensuring an adequate supply of grains, thereby limiting food price inflation.**

About the Black Sea:-

- **Location: between Eastern Europe and Western Asia** in the **Atlantic Ocean.**
- **Major rivers:** Danube, Dnieper, and Don.
- **Bordering countries:** Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine.

Important water bodies around the Black Sea:-

- The Black Sea ultimately drains into the Mediterranean Sea via the **Turkish Straits** and the Aegean Sea.
- **Bosporus Strait:** connects the **Black Sea to the Sea of Marmara.**
- **Strait of the Dardanelles:** connects the **Sea of Marmara to the Aegean Sea.**
- **Kerch Strait:** connects the **Black Sea to the Sea of Azov.**

MUST READ: Loss of the 'Moskva' & Black Sea
SOURCE: AIR

ECONOMY

Gross Non-Performing Assets (GNPA)	**Context:** The **Gross Non-Performing Assets (GNPA) ratio** of Scheduled Commercial Banks has fallen to 10-year low **of 3.9 per cent in March 2023** as per recent reports.

Background:-
- Reserve Bank of India has informed that the Gross Non-Performing Assets (GNPA) ratio of Scheduled Commercial Banks has fallen to **10-year low** of 3.9 per cent in March 2023.

About Gross Non-Performing Assets (GNPA) ratio:-
- **Non-Performing Assets (NPA):** NPAs are loans or advances made by a financial institution, on which both principal or interest is unpaid for a specified period**.**
- Gross Nonperforming assets (GNPA) is an **absolute amount.**
- Net non-performing assets (NNPA) ratio declined to 1 per cent.
    - NNPA: This amount is realized after the provision amount has been deducted from the gross non-performing assets.
    - Gross Nonperforming assets – Provisioning = Net Nonperforming assets.
- It tells the **total value of gross non-performing assets** for the bank **in a particular quarter or financial year**, as the case may be.
- GNPA ratio is the ratio of **total gross non-performing assets to total loans of the bank.**
- **Interpretation:** A **very high GNPA** means the institution's asset quality is in bad shape.
- **Significance:** The GNPA ratio estimate is **to assess the resilience of banks to unforeseen shocks emanating from the macroeconomic environment.**

Types of NPA:-
- **Standard Assets:** assets that carry a normal risk and are not NPA in the real sense of the word.
    - No special provisions are required for standard assets.
- **Sub Standard:** is an asset where repayment has not been done for **up to twelve months.**
- **Doubtful:** an asset that has remained as an **NPA for a period exceeding twelve months.**
- **Loss:** one where **loss has already been identified by the bank** or an external institution, **but it is not yet completely written off.**

Impacts of rise in NPAs:-
- Lenders suffer a **lowering of profit margins.**
- **Stress in the banking sector** causes less money available to fund other projects, therefore, a negative impact on the larger national economy.
- **Higher interest rates by the banks** to maintain the profit margin.
- As investments got stuck, it may result in **unemployment.**
- **Investors** do not get rightful returns.
- Both the **banks and the corporate sector have stressed the balance sheet**, which causes the halting of the investment-led development process.
- NPAs-related cases add more pressure to already **pending cases with the judiciary.**

MUST READ: RBI issues revised PCA framework for banks
SOURCE: AIR

Gramodyog Vikas Yojna	**Context:** Recently, the Lieutenant Governor of Delhi distributed Honey Bee-Boxes and Toolkits to 130 beneficiaries under the **Gramodyog Vikas Yojna.**

About Gramodyog Vikas Yojna:-
- **Launched:** 2020.
- **Objective:** assisting and developing of agarbatti industry and its artisans thereby.
- **Ministry:** Ministry of Micro, Small and Medium Enterprises (MSME)
- The programme aims to enhance the production of 'Agarbatti' in the country and create sustainable employment for the traditional Artisans, by providing **them with regular employment and an increase in their wages.**

Components of the Yojana:-
- **Research & Development and Product Innovation:** R&D support would be given to the institutions that intend to carry out **product development, new innovations, design development, product diversification processes etc.**
- **Capacity Building:** exclusive **capacity building of staff**, as well as the artisans, would be adequately addressed through the existing Multidisciplinary Training Centers (MDTCs) and institutions of excellence.
- **Marketing & Publicity:** The institutions will be provided **market support.**
  - It will be done by way of **preparation of a product catalogue, Industry directory, market research, new marketing techniques, buyer-seller meet, arranging exhibitions etc.** (Effects of globalisation on the rural population of India)

Khadi and Village Industries Commission (KVIC)
- **Establishment:** 1957.
- It is a **statutory body** established under the Khadi and Village Industries Commission Act, of 1956.
- **Objectives of KVIC:-**
  - To **boost employment** in the country. (Project Re-Hab)
  - To promote the promotion and **sale of Khadi articles.**
  - To cater to **the self-reliance doctrine** of the country by empowering **underprivileged and rural sections of society.**
- **Function:** The KVIC is charged with the planning, promotion, organization and implementation of programmes for the development of Khadi and other village industries in the rural areas in coordination with other agencies engaged in rural development wherever necessary.
- **Ministry:** Ministry of Micro, Small and Medium Enterprises

MUST READ: Rural Manufacturing
SOURCE: PIB

World Investment Report 2023	**Context:** Recently, **the World Investment Report 2023** was released.

About the World Investment Report 2023:-
- **Published by:** United Nations Conference on Trade and Development (UNCTAD).
- **Objectives:** it focuses on trends in Foreign Direct Investment (FDI) worldwide, at the regional and country levels and emerging measures to improve its contribution to development. (FDI Inflow)

Key Findings:-
- **India and ASEAN** registered foreign direct investment (FDI) **increases of 10 % and 5%, respectively.**(FDI Policy Change and Government Initiatives).
- FDI inflows were **higher in developing countries**.
- **China**, the **second largest FDI host country** in the world, saw a **5% increase.**
- **Gulf region**: **FDI declined,** but the number of **project announcements increased** by two-thirds.

- Inflows in many smaller developing countries were stagnant, and **FDI to the least developed countries (LDCs) declined.**
  - **LDC:** developing countries listed by the United Nations that exhibit the lowest indicators of socioeconomic development.
- Much of the growth in international **investment in renewable energy has been concentrated in developed countries.**
- The **investment gap** across all sectors of the Sustainable Development Goals has **increased** to more than $4 trillion per year from $2.5 trillion in 2015.
- The **largest gaps are in energy, water and transport infrastructure.**

United Nations Conference on Trade and Development (**UNCTAD)**
- **Established: 1964.**
- UNCTAD is the UN's **leading institution dealing with trade and development.**
- It is a **permanent intergovernmental body** established by the **United Nations General Assembly.**
- UNCTAD is **part of the UN Secretariat.**
- **HQ:** Geneva in Switzerland.
- **Membership:** it has a membership of 195 countries.
  - It is one of the largest in the UN system.

Functions of UNCTAD: -
- It **supports developing countries to access the benefits of a globalized economy** more fairly and effectively.
- It provides **economic, trade analysis, and facilitates consensus building**.
- It offers **technical assistance** to help developing countries use trade, investment, finance and technology for inclusive and sustainable development.

Some of the reports published by it are-
- Trade and Development Report
- World Investment Report
- The Least Developed Countries Report
- Information and Economy Report
- Technology and Innovation Report
- Commodities and Development Report

MUST READ: [Foreign Direct Investment equity flows into India](#)
SOURCE: [DOWN TO EARTH](#)

Intellectual Property Rights (IPR)	**Context:** Recently, Delhi High Court dismissed PepsiCo's plea against a revocation order on its **Intellectual Property Rights (IPR)** certificate for potato variety. **Background:-** • The Delhi High Court on July 5, 2023, dismissed an appeal filed by PepsiCo India Holdings (PIH) against a 2021 order that had revoked the PVP (plant varietal protection) certificate granted to the company for a potato variety (FL-2027). [(Pepsico v/s Potato Farmers)](#) • The FL-2027 variety of potatoes, **used in Lays potato chips**, came to the limelight in April 2019, when it became the centerpiece for a fight in the potato belt of northern Gujarat. • Alleging that farmers who were not part of its "collaborative farming programme" were also growing and selling this variety in Gujarat, PepsiCo had **filed rights infringement cases against farmers.** **About FL2027:-** • It is a for a potato variety.

- Its **commercial name is FC-5**.
- It has a **5 per cent lower moisture content** than other varieties.
- With 80 per cent moisture content, as compared to the usual 85 per cent, this variety is considered **more suitable for processing and therefore, for making snacks such as potato chips.**
- The variety was **first cultivated by Dr Robert W. Hoopes**, who holds the most potato patents and potato variety protections in the whole world.
- FL2027 came to be **registered in the US in 2005** and was put **to commercial use in India in 2009**.
- **PepsiCo had then granted licenses to some farmers** in Punjab to grow the variety on a buyback system.
  - **Buyback system allows the company to buy all the produce from these farmers at pre-decided rates.**
- PepsiCo applied for registration of the potato variety in India in 2011.
- It was granted registration in **2016.**
- Pepsi's North America subsidiary Frito-Lay **has the patent** for the potato plant variety FL-2027 **until October 2023.**
- For India, Pepsi Co has patented FC-5 until **January 2031** under the **Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001.**

PPVFR Act, 2001 has been enacted in India for giving effect to the TRIPS Agreement:-
- The PPVFR Act **retained the main spirit of TRIPS**.
- The Act also had **strong provisions to protect farmers' rights**.
- The act **allows farmers to plant, grow exchange & sell patent-protected crops, including seeds, & only bars them from selling it as "branded seed".**
- It recognized three roles for the **farmer: cultivator, breeder & conserver.**
  - As cultivators, farmers were entitled **to plant-back rights.**
  - As breeders, farmers were held **equivalent to plant breeders.**
  - As conservers, farmers were entitled to rewards from a **National Gene Fund.**

The patent dispute Issue:-
- In 2019, **PepsiCo sued nine Gujarat farmers for cultivating the same potato variety,** accusing them of infringing its intellectual property rights (IPR).
- It **sought over Rs. 1 crore each** from the farmers for alleged patent infringement under the **Protection of Plant Varieties and Farmers' Rights Act, 2001.**
- However, PepsiCo soon **withdrew the suit** after discussions with the government.

Arguments by Farmers:
- The farmers stated that as per the agreement, PepsiCo would collect potatoes of diameter greater than 45 mm and those farmers had been storing smaller potatoes for sowing next year.
- They **got registered seeds from known groups and farmer communities** and had been sowing these for the last four years or so, and **had no contractual agreement with anyone.**
- According to **Section 39(1)(iv) of the PPV&FR Act,** a farmer is entitled to save, use, share or sell his farm produce including seed of a variety protected under this Act, provided that he is not entitled to sell branded seed of a variety protected under this Act. Hence, there was no violation.

Arguments by breeder: -
- In the US, if **someone has patented a seed, no other farmer can grow it**

	• However, the same **does not apply in India.**
	The court's take on the matter:-
	• The court **observed that PepsiCo India Holdings (PIH) had ticked the variety as 'New variety' instead of 'extant variety', which is a crop variety that exists in a country.**
	• The judgment was **upheld on the grounds of an ineligible registrant and failure to provide necessary documents** under various provisions of the Act.
	• Based on these**, an order that revoked the PVP (plant varietal protection) certificate granted** to the company for a potato variety (FL-2027) was made in 2021.
	• Hence, the **suing of farmers by PepsiCo was not seen in the public interest.**
	MUST READ: Boosting patent ecosystem
	SOURCE: DOWN TO EARTH
SEBI's Complaints Redress System (SCORES)	**Context:** As per recent reports, **SEBI's SCORES platform** disposed of 3,079 complaints in June.
	Background:-
	• At the beginning of June, as many as 3,141 complaints were pending, and 3,967 fresh complaints were received, according to SEBI.
	About SEBI's Complaints Redress System (SCORES)platform:-
	• **Launched: 2011.**
	• **Launched by: SEBI.**
	• SEBI's Complaints Redress System (SCORES) is a **grievance redressal system**.
	• **Objective:** It **enables investors to lodge and follow up on their complaints and track the status** of redressal of such complaints online.
	• **These complaints are related to** investment advisers, research analysts, corporate governance/listing conditions, minimum public shareholding, venture capital funds and takeover/restructuring.
	• SCORES **does not deal with complaints against companies**.
	• **Laws covered:** Complaints arising out of issues that are covered under the **SEBI Act, Securities Contract Regulation Act, Depositories Act and rules and regulations made there under relevant provisions of the Companies Act, 2013.**
	• **Time limit:** The complaint shall be lodged on SCORES **within one year** from the date of the cause of action.
	• **Average resolution time for a complaint**: 31 days. **SEBI)**
	MUST READ: Sweat Equity Rules: SEBI
	SOURCE: BUISINESS STANDARD
Directorate General of foreign trade (DGFT)	**Context**: Recently, the **directorate general of foreign trade (DGFT)** has imposed restrictions on imports of certain gold jewellery and articles.
	Background:-
	• Restrictions mean that **a license will be required from the government to import these goods.**
	• Although, **no such permission is required for imports under** the India-UAE Comprehensive Economic Partnership Agreement (CEPA) tariff rate quota ((TRQ).
	o **CEPA:** It is a kind of free trade pact, which covers negotiation on the trade in services and investment, and other areas of economic partnership.
	o **TRQ:** It allows a lower tariff rate on imports of a given product up to a specified quantity.
	About Directorate General of foreign trade (DGFT):-
	• **Establishment: 1991.**
	• **HQ: New Delhi.**
	• **Ministry: Ministry of Commerce and Industry.**

- **Headed by: Director General of Foreign Trade.**
- **Objective:** promoting India's exports.

Functions of DGCI:-
- **Licensing** of imports and exports.
- **Regulate, restrict or prohibit** exports and imports. (Free Trade Agreements regime)
- Providing a complete **database** of all exporters and importers in India.
- It has the authority to **prohibit, restrict, and regulate** importers and exporters.
- It plays an advisory role to the **Government on Policy measures** pertaining to national and international economic scenarios.
- It is responsible for **formulating and implementing the Foreign Trade Policy.** (New Foreign Trade Policy)
- It also **issues scrips/authorization** to exporters and **monitors** their corresponding obligations.

MUST READ: Moratorium on e-commerce trade
SOURCE: AIR

PM-MITRA

Context: Recently, Prime Minister Narendra Modi said that the **PM-MITRA** mega textile parks would bolster productivity, foster innovation and generate many employment opportunities.

About PM-MITRA:-

PM MITRA
A LANDMARK DECISION TO EMPOWER TEXTILES SECTOR
Approves 7 Mega Integrated Textile Region & Apparel (MITRA) Parks

7 MITRA Parks with a total outlay of ₹4,445 Crores in a period of 5 years

World-class Industrial infrastructure to attract investment

Generation of 7 lakh direct and 14 lakh of indirect employment

- **Launched: 2021.**
  o The setting up of 7 PM MITRA Parks was announced in the **Union Budget for 2021-22** and later **approved by the Central Government. (PM MITRA)**
- **Ministry: Ministry of Textiles**
- **Objective:** It aspires to fulfil the vision of building an Aatmanirbhar Bharat and to position India strongly on the Global textiles map.

Key Features of PM MITRA:-
- The PM MITRA scheme is inspired by the **5F vision - Farm to Fibre to Factory to Fashion to Foreign.**

- PM MITRA Parks will be developed by a Special Purpose Vehicle which will be owned by the State Government and Government of India in a **Public Private Partnership (PPP) Mode. (PM MITRA Parks)**
- The Park will have:-
  o **Core Infrastructure:** Incubation Centre & Plug & Play facility, Developed Factory Sites, Roads, Power, Water and Waste Water system, Common Processing House & CETP and other related facilities e.g. Design Centre, Testing Centers etc.
  o **Support Infrastructure:** Workers' hostels & housing, Logistics Park, warehousing, medical, training & skill development facilities.
- **Competitiveness Incentive Support (CIS) of ₹300 Crore** will also be provided to each PM MITRA park for the early establishment of textiles manufacturing units in PM MITRA Park.

Advantages of PM MITRA:-
- PM MITRA Parks aim to have **world-class industrial infrastructure.**
- They will attract cutting-edge technology and **boost FDI and local investment** in the textiles sector.

	• The Parks offer an **opportunity to create an integrated textiles value chain** right from spinning, weaving, processing/dyeing and printing to garment manufacturing at one location. • Integrated Textile Value chain at one location will **reduce the logistics cost of the Industry.** • Intended to **generate 1 lakh direct and 2 lakh indirect employment** per park. • 7 Mega Integrated Textile Region and Apparel (PM MITRA) Parks are aimed at helping India to achieve the **United Nations Sustainable Development Goal 9:** "Build resilient infrastructure, promote sustainable industrialization and foster innovation". **MUST READ: Textile Industry in India** **SOURCE: AIR**
Local Currency Settlement (LCS) system	**Context:** India and UAE have signed a historic Memorandum of Understanding on **Local Currency Settlement (LCS) system.** **Background:-** • The agreement was signed between the **Reserve Bank of India and the Central Bank of the UAE.** • **Objective:** to revolutionize cross-border transactions between the two nations. **About Local Currency Settlement (LCS) system:-** • The Local Currency Settlement (LCS) system enables exporters and importers to invoice and **pay in their respective domestic currencies.** • The LCS system between India and UAE **allows for the use of the Indian Rupee and UAE Dirham** in bilateral trade. • It is **India's first-ever LCS arrangement.** • This innovative system is expected to have a **transformative impact on transaction costs and processing time.** • It is anticipated to have a ripple effect on **global economic engagements, encouraging the use of local currencies and fostering greater financial independence**. • It will **increase the reliance on local currencies.** • The LCS system will provide a **seamless and efficient mechanism for cross-border transactions**. (India-UAE and FTA) • It will **reduce dependence on international currencies** and **further strengthen economic cooperation.** • It will **enable the use of surplus balances in local currencies** for investment in various local currency assets, such as corporate bonds, government securities, and equity markets, creating new avenues for growth and collaboration. • It will **amplify the preferential terms** already established by the **Comprehensive Economic Partnership Agreement (CEPA)**, bringing new opportunities for trade and investment. ○ **CEPA:** a free trade agreement between two countries, which covers negotiation on the trade in services and investment, and provides for an institutional mechanism to encourage and improve trade between the two countries. (CEPA between India and the UAE) • This arrangement would also **promote investments and remittances.** **MUST READ: India-UAE relations** **SOURCE: AIR**
Export Preparedness Index 2022 report	**Context:** Recently, NITI Aayog released the **Export Preparedness Index 2022 report.** **About Export Preparedness Index 2022 report:-** • **Released by: Vice Chairman, NITI Aayog.** • This is the **third edition** of the Export Preparedness Index (EPI).

- EPI is a comprehensive tool which **measures the export preparedness** of the States and UTs in India. (Export Preparedness Index 2021)

Objectives of the report:-
- To present a comprehensive picture of a state's and UT's **export preparedness.**
- To **highlight the achievements** of states/UTs and encourage peer learning among the states/UTs.
- To uphold the spirit of **competitive federalism.**

Assessment Process:-
- EPI assess the performance of the States and UTs across **four pillars** – **Policy, Business Ecosystem, Export Ecosystem, and Export Performance.**
- Each pillar is composed of **sub-pillars**, which in turn capture a state's performance using relevant indicators.
  Policy Pillar
- It evaluates states' and UTs' performance based on its adoption of **export-related policy ecosystem** at a state and district level as well as the institutional framework surrounding the ecosystem.

Significance of the report:-
- It gives an overview of the **country's sector-specific export performance.**
- It highlights the **need to develop our districts as export hubs** in the country and undertakes a district-level analysis of merchandise exports in the country.
- The index undertakes a **comprehensive analysis** of States and UTs across export-related parameters in order to identify their strengths and weaknesses.

Key Highlights of Export Preparedness Index 2022 report:-
- The report discusses **India's export performance amid the prevailing global trade context in FY22**. (Export Preparedness Index 2020)
- The **coastal states have performed well.**
- **Top performers:** Tamil Nadu, Maharashtra, Karnataka, and Gujarat.
- The higher average of coastal states represents their **better preparedness** and **higher contribution to national export.**
- **73 per cent of districts** in the country **have an export action plan**, and o**ver 99 per cent are covered under the One District One Product scheme.**
  - **One District One Product scheme:** The initiative aims to select, brand, and promote at least **One Product from each District** (One District - One Product) of the country for enabling holistic socioeconomic growth across all regions. (One District One Product(ODOP))
  - It was launched by the **Ministry of Food Processing Industries.**
- **100 districts** in the country **are responsible for nearly 87 per cent of the country's export.**
- **Lack of adequate transport connectivity**: the report mentions that the **absence of air connectivity** hampers the movement of goods across regions especially in the landlocked states.
- **Recommendations of the report:-**
  - For the states which are lagging in terms of export commission, **the central government should extend support** to enable them to build the necessary ecosystem to facilitate their export.
  - Indian **states need to invest in research and development** for developing **market-specific products** and **improving product quality.**

	MUST READ: India's Agricultural and processed food products exports **SOURCE:** AIR
External commercial borrowings (ECBs)	**Context:** Recent increase in **External commercial borrowings (ECBs)** signal the revival of private capital expenditure (Cap Ex). **Background:-** - Agreements for external commercial borrowings (ECBs) signed by Corporate India jumped to a **massive $12 billion in the April-June quarter, three times** the level in the year-ago period, and as much **as 80% of the inflows during the whole of the last financial year.** - Nearly **two-thirds of the ECBs** registered in the quarter were for **investment activities.** **About External commercial borrowings (ECBs)**

EXTERNAL COMMERCIAL BORROWINGS

An external commercial borrowing (ECB) is an instrument used in India to facilitate Indian companies to raise money outside the country in foreign currency for expansion of existing capacity as well as for fresh investments.

ROUTES FOR ECB

Route 1 : Automatic Route
If company passes all govt. prescribed norms, it can raise money without any prior approval.

Route 2 : Approval Route
For specific pre-specified sectors, explicit permission of the government/RBI to be taken before borrowing through ECB.

ADVANTAGES
1. The cost of fund is cheaper if borrowed from economies with lower rate of interest.
2. Satisfy larger requirement from global players.
3. It does not dilute stake in the company
4. Borrower can diversify the investor base.
5. Provides good exposure to opportunities globally
6. The economy also enjoys benefits, as government gets direct inflows into the sector, which have potential to grow.
7. Improve the profitability of the companies

DISADVANTAGES
1. May bring lax attitude on the company's side resulting in excessive borrowing and higher debt burden.
2. Higher debt may lead to downgrade by rating agencies.
3. repayment of the principal and the interest needs to be made in foreign currency and hence exposes company to exchange rate risk.

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- External commercial borrowing (ECB) is borrowing made in foreign currency **by non-resident lenders to Indian borrowers.**
- It is an instrument used in India **to facilitate Indian companies to raise money outside the country** in foreign currency.
- The **government of India permits** Indian corporates to raise money via ECB **for the expansion** of existing capacity as well as **for fresh investments.**
- **Implementing Agencies: The DEA (Department of Economic Affairs), Ministry of Finance**, along with **Reserve Bank of India,** monitors and regulates ECB guidelines and policies. **(RBI relaxed norms to stem rupee slide and to forex inflows)**

Benefits of ECB:-
- ECBs provide an opportunity to borrow **large volumes of funds.**
- The funds are available for a **relatively long term.**
- The **cost of funds is usually cheaper from external sources** if borrowed from economies with a lower interest rate.
  - **For example** Indian companies can usually borrow at lower rates from the U.S. and the Eurozone as interest rates are lower there compared to the home country, India.
- **Availability of a larger market** can help companies satisfy larger requirements from global players better than what can be achieved domestically.
- ECB is just a form of a loan and may not be of an equity nature or convertible to equity. Hence, **it does not dilute the stake in the company** and can be done without giving away control because debtors do not enjoy voting rights.
- The **borrower can diversify the investor base.**
- It provides **access to international markets**. (Hyper globalisation)
- The economy also enjoys benefits, as the **government can direct inflows** into the sector and have the potential to grow.

Disadvantages of ECB
- Availability of funds at a cheaper rate may bring in a lax attitude on the company's side, resulting in **excessive borrowing.**

o This eventually results in higher (than requirement) debt on the balance sheet, which **may affect many financial ratios adversely.**

- **Higher debt on the company's balance sheet** is usually viewed negatively by the rating agencies, resulting in a possible **downgrade by rating agencies** which eventually might increase the cost of debt.
- This may also **tarnish the company's image in the market** and the market value of the shares too in eventual times.
- Since the borrowing is foreign currency-denominated, the repayment of the principal and the interest needs to be made in foreign currency, **exposing the company to exchange rate risk**.

MUST READ: Rupee appreciation and depreciation

SOURCE: FINANCIAL EXPRESS

Advance Authorisation Scheme	**Context:** Recently, the Directorate General of Foreign Trade (DGFT) implemented the **Advance Authorisation Scheme**.
	Background:-
	• The DGFT has created a **user-friendly and searchable database** of Ad-hoc Norms fixed in previous years.
	• These norms can be used by any exporter without requiring a Norms Committee review as outlined in the Foreign Trade Policy 2023.
	• The database is hosted on the **DGFT Website.**
	About Advance Authorisation Scheme:-
	• It is a type **of duty exemption scheme. (AAS)**
	• **Launched:** It was introduced by the Government of India under the **Foreign Trade Policy 2015-2020.**
	• **Objective:** to make India's products competitive in the global market.
	• Under this scheme, **exemption from the payment of import duties** is given to **raw materials/inputs required** for the manufacture of export products.
	• The eligibility of inputs is determined by **Sector-specific Norms Committees** based on input-output norms.
	• The **quantity of inputs allowed for a given product is based on specific norms** defined for that export product, which considers the waste 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.
	   o Alternatively, **exporters may apply for their own ad-hoc norms** in cases where the SION does not suit the exporter.
	• **Prerequisites for Applying:**
	   o To apply for an Advance Authorization scheme, an **Import-Export Code (IEC)** is required.
	   o Other prerequisites are mentioned in **Chapter 4 of Foreign Trade Policy and Handbook of Procedures.**
	Exemptions under Advance Authorisation Scheme:-
	• Under the Advance Authorization Scheme, the **basic customs duty, education cess, social welfare cess, anti-dumping duty, countervailing duty, and safeguard duties** are exempt.
	• **IGST and compensation cess** are also exempted.
	Eligibility for Advance Authorisation Scheme:-
	• Benefits of DGFT Advance License can be availed of by the **manufacturer exporter or merchant exporter** with a link to the supporting manufacturer.

- It is also available **to sub-contractors of projects** where the name of the sub-contractor appears in the contract, in case of supply to the UN or other aid programs.
- Payment for such types of contracts must be received in **freely convertible foreign exchange**.
- It is issued for physical exports, including **exports to SEZs, intermediate supplies, and supply of stores** onboard vessels/aircraft, subject to conditions.

About Directorate General of Foreign Trade
- **Establishment: 1991.**
- **HQ: New Delhi.**
- **Ministry: Ministry of Commerce and Industry.**
- **Headed by: Director General of Foreign Trade.**
- **Objective:** promoting India's exports.

Functions of DGCI:-
- **Licensing** of imports and exports.
- Regulate, **restrict or prohibit exports and imports**. (Free Trade Agreements)
- Providing a **complete database** of all exporters and importers in India.
- It has the authority to **prohibit, restrict, and regulate importers and exporters.**
- It plays an **advisory role to the Government** on Policy measures pertaining to national and international economic scenarios.
- It is responsible for formulating and **implementing the Foreign Trade Policy.** (New Foreign Trade Policy)
- It also **issues scrips/authorization** to exporters and monitors their corresponding obligations.

MUST READ: Conditional Market Authorization
SOURCE: PIB

National Co-Operative Consumers Federation of India Limited (NCCF)	**Context:** Recently, the Department of Consumer Affairs directed the **National CO-Operative Consumers Federation of India Limited (NCCF)** and National Agricultural Cooperative Marketing Federation of India Ltd (NAFED) to sell tomatoes at a retail price of 70 rupees per kg.

Background:-
- The tomatoes procured by NCCF and NAFED had been retailed at 90 rupees per kg initially and then reduced to 80 rupees per kg from 16th July.
- The reduction to 70 rupees per kg will further benefit the consumers.

About National Co-Operative Consumers Federation of India Limited (NCCF)
- **Establishment: 1965.**
- **Ministry: Ministry of Consumer Affairs, Food & Public Distribution.**
- **HQ: New Delhi.**
- NCCF is the **apex body of consumer cooperatives** in the country. (India's Cooperative Sector)
- It is registered under the **Multi-State Cooperative Societies Act, 2002.**
- **Shareholding:** Government of India owns **65.42%.**

Objectives of NCCF:-
- Render **technical guidance and assistance** to improve and increase their operation and management efficiency.
- Create and promote the **formation of cadres of employees.**
- Hold seminars, **conferences, and meetings and undertake publicity**, propaganda and similar other activities.

- Establish **trade connections** with manufacturers, their authorized distributors and suppliers/dealers including Government agencies and cooperative organizations.
- **Import and export** of agricultural commodities.
- **Collect and disseminate necessary marketing intelligence** for the benefit of its member institutions.
- **Establish testing laboratories** for testing consumer goods.
- To **act as agents of Central/State Government** or undertaking/corporation or cooperative institutions or any business enterprises for the purpose of sale, storage and distribution of consumer goods approved by the Board of Directors from time to time entrusted by Central/State Governments.

National Agricultural Cooperative Marketing Federation of India Ltd (NAFED)
- **Establishment: 1958. NAFED)**
- **Ministry: Ministry of Agriculture & Farmers Welfare.**
- **HQ: New Delhi.**
- It is an apex organization of marketing cooperatives for agricultural produce in India.
- It is registered under the **Multi-State Co-operative Societies Act, 2002.**
- **Objectives:** to **promote Cooperative marketing** of agricultural produce to benefit the farmers.
- Agricultural farmers are the main members of NAFED.
    - They have the **authority to say in the form of members** of the General Body in the working of NAFED.

MUST READ: Primary agricultural credit societies (PACS)
SOURCE: AIR

Animal Husbandry Infrastructure Development Fund (AHIDF)	**Context:** The Ministry of Fisheries, Animal Husbandry, and Dairying (DAHD) has introduced the **Credit Guarantee Scheme** under the **Animal Husbandry Infrastructure Development Fund (AHIDF).** **About the Credit Guarantee Scheme of AHIDF:-** • The credit guarantee scheme **facilitates access to finance for un-served and under-served livestock sector.** • It aims to strengthen the credit delivery system and ensure smooth access to finance for entrepreneurs engaged in the Livestock sector. (Dairy Cooperatives) • **Implementing Agency:** Animal Husbandry Infrastructure Development Fund (AHIDF). • **Objective:** to support the Livestock sector's Micro, Small & Medium Enterprises (MSMEs) **without the need for collateral security.** • **Funding:** a credit guarantee fund trust of Rs 750 crore, which will cover up to 25 per cent of credit facilities extended to eligible MSMEs by lending institutions. • The trust, formed in partnership with **NAB Sanrakshan Trustee Company Private Ltd**, a subsidiary of NABARD, ensures credit guarantees for MSMEs under the AHIDF scheme. (Special Livestock Sector Package) **Key features of the scheme:-** • **Interest subvention** of three per cent. • **Loan of up to 90 per cent** of the total project cost from any Scheduled Bank, National Cooperative Development Corporation (NCDC). **Eligibility under the scheme:-** • The scheme targets **underserved sections of society,** including first-generation entrepreneurs and underprivileged individuals, who often lack collateral security for their ventures.

Benefits under the scheme:-
- By providing **access to financial assistance**, it promotes investments in various areas of the livestock sector.
- These include sectors such as **dairy and meat processing, animal feed plants, breed improvement technology, waste management, and veterinary vaccine and drug manufacturing facilities.**

About the Animal Husbandry Infrastructure Development Fund (AHIDF):-
- **Launched:2021.**
- **Ministry: Ministry of Fisheries, Animal Husbandry and Dairying.**
- **Implementing Agency: Department of Animal Husbandry & Dairying.**
- It is the **Nation's first-ever fund** trust under the Credit guarantee scheme of AHIDF in the agriculture and Animal Husbandry sector.

Objectives of AHIDF:-
- To help **to increase milk and meat processing capacity** and product diversification thereby providing greater access for unorganized rural milk and meat producers to organized milk and meat market.
- To make available **increased price realization** for the producer.
- To **make available quality milk and meat products** for the domestic consumer.
- To fulfil the objective of protein-enriched quality food requirement of the growing population of the country and **prevent malnutrition** in one of the highest malnourished children populations in the world.
- **Develop entrepreneurship** and generate employment.
- To **promote exports** and increase the export contribution in the milk and meat sector.
- To make available **quality concentrated animals feed** to the cattle, buffalo, sheep, goat, pig and poultry to provide balanced ration at affordable prices.

ACTIVITIES ELIGIBLE FOR AVAILING BENEFITS UNDER AHIDF:-
- **Dairy processing** and value addition.
- **Meat processing** and value addition.
- **Animal Feed manufacturing** units and strengthening of existing Units/plant.
- **Breed Improvement Technology** and Breed Multiplication Farm.
- Setting up of **Veterinary Vaccine and Drugs** Production facilities.
- **Animal Waste to Wealth Management** (Agri-waste management).

MUST READ: Improving Livestock Breeding
SOURCE: BUSINESS STANDARD

National Dairy Development Board (NDDB)	**Context:** An international symposium on sustainable livestock transformation was inaugurated at the **National Dairy Development Board (NDDB).** **About National Dairy Development Board (NDDB):-** • **Establishment: 1965.** • **Ministry: Ministry of Fisheries, Animal Husbandry and Dairying.** • **HQ: Anand, Gujarat, India.** • **Objective:** to replace exploitation with empowerment, tradition with modernity, stagnation with growth, transforming dairying into an instrument for the development of India's rural people.

- The NDDB is a **statutory body** set up by an act of Parliament and was founded by **Dr Verghese Kurien.**

Historical Background of NDDB:-
- It was initially constituted as a society under the **Societies Act 1860.**
- It was **later merged with the former Indian Dairy Corporation**, which was created and registered under the Companies Act 1956, by the NDDB Act 1987, which took effect on October 12, 1987.

Significance of NDDB:-
- **Empowering Rural economy:** The NDDB's initiatives altered India's rural economy by making dairying a viable and profitable business for millions of milk producers. (Women and Cooperative Dairy Farming)
- **Long-term livelihood:** The NDDB reaches out to dairy farmers and provides them with alternative income-generating opportunities, allowing them to build long-term livelihoods.
- NDDB has been effective in **combining dairy farmers' traditional wisdom and experience with modern management strategies** in order to capture the milk and milk products market while also assisting farmers.
- **Operation Flood**: Its most notable achievement is **Operation Flood**, which lasted 26 years and transformed India into the world's greatest milk producer. (UPSC CSE: National Dairy Plan)
  - The **White Revolution** is another name for this.
  - **Operation Flood**: it is the world's largest dairy development program, launched in the year 1970.
  - It established a **national milk grid** that connected farmers across India to customers in over 700 towns and cities, decreasing seasonal and regional pricing differences and guaranteeing that producers receive a large portion of the profit by removing intermediaries.

MUST READ: Dairy Cooperatives
SOURCE: TIMES OF INDIA

Resource Efficiency and Circular Economy Industry Coalition (RECEIC)	**Context:** The **Resource Efficiency and Circular Economy Industry Coalition (RECEIC)** was launched recently. **Background:-** • RECEIC was launched at the side event during the **fourth Environment and Climate Sustainability Working Group and Environment and Climate Ministers meeting** in Chennai, Tamil Nadu. • It was conceptualized under India's G20 Presidency. **About Resource Efficiency and Circular Economy Industry Coalition (RECEIC):-** • **Launched in:2023.** • **Launched at Chennai, Tamil Nadu.** • **Launched by:** Hon' Minister for Environment, Forest and Climate Change Shri Bhupender Yadav. • It was launched in the presence of the Commissioner on Environment from the European Union and Honorable Ministers from **Canada, France, Italy, Denmark, Mauritius, and the United Arab Emirates** • RECEIC is an **industry-driven initiative** aimed at **promoting resource efficiency** and **circular economy practices globally.**

	o **Circular economy:** it is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products for as long as possible. **Circular economy)**
	• The coalition is envisioned to be a **self-sustaining entity** that will continue to operate beyond India's G20 Presidency, making a lasting impact on environmental sustainability.
	• **Founding members: 39 companies headquartered in 11 different countries** have joined the coalition as its founding members.
	• As a collaborative platform, RECEIC aims to **facilitate knowledge-sharing, best practice sharing, and sustainable practices** among the participating industries.
	Principles:-
	• The coalition has three guiding principles –
	o **Partnerships for impact**
	o **Technology Cooperation**
	o **Finance for scale**
	MUST READ: G20 Presidency of India
	SOURCE: AIR
World Economic Outlook	**Context:** The IMF has projected the Indian economy to grow at 6.1% in 2023 in its **World Economic Outlook** report.
	Key Highlights of Report:-
	• **India's Growth projection:** The IMF projected a growth rate of 6.1% for India in 2023, which is a **0.2 percentage point upward revision** compared with the April 2023 projection.
	o This is reflective of the "**momentum" from stronger-than-expected growth** in the fourth quarter of 2022 as a result of stronger domestic investment,
	• **Global Economy:** Global **growth is projected to fall** from an estimated **3.5% in 2022 to 3% in both 2023 and 2024.**
	• **Inflation:-**
	o **Global headline inflation**: expected to fall **from 8.7% in 2022 to 6.8% in 2023 and 5.2% in 2024.**
	o **Underlying (core) inflation:** is projected to decline more gradually, and forecasts for inflation in 2024 have been revised upward.
	• **Financial sector: the turbulence could resume** as markets adjust to further policy tightening by central banks.
	• **USA and China:-**
	o The **United States** economy has **slowed down considerably** and faces uncertainty amid global and domestic headwinds.
	o **China's recovery could slow**, in part as a result of unresolved real estate problems, with negative cross-border spillovers.
	• **Debt Vulnerabilities in Frontier Economies:-**
	o There is a need for a **global debt resolution initiative** to address debt vulnerabilities in frontier economies.
	o **Sovereign debt distress could spread** to a wider group of economies.
	• **Central Banks' policy measures:** The central banks in economies with elevated and persistent core inflation should continue to clearly signal their commitment to reducing inflation.
	o **A restrictive stance**, with real rates above neutral is needed until there are clear signs that underlying inflation is cooling.

Latest World Economic Outlook Growth Projections

PROJECTIONS

(real GDP, annual percent change)	2021	2022	2023
World Output	6.0	3.2	2.7
Advanced Economies	5.2	2.4	1.1
United States	5.7	1.6	1.0
Euro Area	5.2	3.1	0.5
Germany	2.6	1.5	-0.3
France	6.8	2.5	0.7
Italy	6.7	3.2	-0.2
Spain	5.1	4.3	1.2
Japan	1.7	1.7	1.6
United Kingdom	7.4	3.6	0.3
Canada	4.5	3.3	1.5
Other Advanced Economies	5.3	2.8	2.3
Emerging Market and Developing Economies	6.6	3.7	3.7
Emerging and Developing Asia	7.2	4.4	4.9
China	8.1	3.2	4.4
India	8.7	6.8	6.1
ASEAN-5	3.4	5.3	4.9
Emerging and Developing Europe	6.8	0.0	0.6
Russia	4.7	-3.4	-2.3
Latin America and the Caribbean	6.9	3.5	1.7
Brazil	4.6	2.8	1.0
Mexico	4.8	2.1	1.2
Middle East and Central Asia	4.5	5.0	3.6
Saudi Arabia	3.2	7.6	3.7
Sub-Saharan Africa	4.7	3.6	3.7
Nigeria	3.6	3.2	3.0
South Africa	4.9	2.1	1.1
Memorandum			
Emerging Market and Middle-Income Economies	6.8	3.6	3.6
Low-Income Developing Countries	4.1	4.8	4.9

Source: IMF, World Economic Outlook, October 2022.

Note: For India, data and forecasts are presented on a fiscal year basis, with FY 2021/2022 starting in April 2021. For the October 2022 WEO, India's growth projections are 6.9 percent in 2022 and 5.4 percent in 2023 based on calendar year.

INTERNATIONAL MONETARY FUND   IMF.org

About World Economic Outlook:

- **Published by: (IMF).** WEO)
- It is a survey by the IMF that is usually published twice a year in the months of **April and October.**
- **Objective:** It analyzes and predicts global economic developments during the near and medium term.

Significance of the World Economic Outlook:-

The reports provide-

- **Analysis and forecasts** of economic developments and policies in its member countries.
- **Encapsulates the state of the global economy.**
- Highlight **risks and uncertainty** that could threaten growth.
- This report is the main instrument for **disseminating the findings and analysis of their global surveillance** activities to the world.

MUST READ: IMF bailout

GEOGRAPHY

Chenchu tribals	**Context:** Recently, the **Chenchu tribals**, joined the drive to make Nallamala forests of Andhra Pradesh free of plastic.

Background:-
- Eco-tourism, nature trails, jungle safaris and wildlife tourism brought the menace of plastic pollution.
- The native Chenchu tribals have been roped in for a drive to become the green warriors of the Nallamala forests of Andhra Pradesh.

About Chenchu tribals:-
- The Chenchu are a tiny migratory forest tribe from **Odisha.**
- They migrate over the state lines of **Andhra Pradesh** and Odisha in search of work.
- They are a **Particularly Vulnerable Tribal Group (PVTG).**
  - **PVTG:** is a sub-classification of a Scheduled Tribe or section of a Scheduled Tribe that is considered more vulnerable than a regular Scheduled Tribe.
- **Language:** they talk in the **Chenchu language,** a member of the Dravidian language family.
- **Dravidian languages family:** a language family spoken by people, mainly **in southern India, northeast Sri Lanka, and south-west Pakistan.**
  - It includes **Tamil, Telugu, Kannada, and Malayalam.**
- **Distribution:** They are forest dwellers whose hamlets or Pentas dot the **Nallamala forest range** spread across four to five districts in Telangana and Andhra Pradesh states.
  - They **dwell in little homes with wattle dividers** that look like colonies.
  - They are **magnificent climbers.**
- **Features:** they are low in height, with a long head, clear-cut foreheads, and a level nose.
  - Their coloring goes from wheat dark to brown, and they have ebony wavy hair.
- **Occupation:** Their traditional way of life has been based on **hunting and gathering.**
  - They make leaf cups and **leaf plates out of tobacco leaves, tamarind, and mahua flowers** and sell them in the local marker.
  - They also make **use of the mahua flower in making the liquor.**
  - They are also master **bamboo cutters and honey catchers.**

Nallamala Forest Area
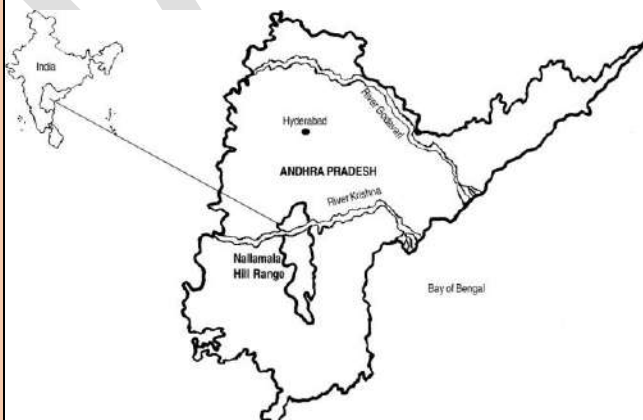
- They are the largest stretches of undisturbed forest in **South India,** apart from the Western Ghats.
- **Location:** It is located in Nallamala Hills, which is a part of the Eastern Ghats.
  - It lies **south of the Krishna River.**
  - Nallamala Forest Reserve is located in the **Nallamala Ranges of the Eastern Ghats.**

o A part of the forest reserve belongs to **the Nagarjunsagar-Srisailam Tiger Reserve** which is the largest Tiger Reserve in India. (Amrabad Tiger Reserve)
- **Climate:** It has a **warm to hot climate** throughout the year.
  o Summer is especially hot and winters are mostly cool and dry.
  o It gets most of its rain during the **South West monsoon.**
- **Vegetation: Tropical dry deciduous.**
- **Fauna:** tigers, leopards, such as black buck, wild hog, peacock, pangolin, Indian Python King Cobras and several rare bird species.

MUST READ: Wildlife Conservation in Arunachal Pradesh
SOURCE: THE HINDU

Water Positive India

Context: Recently, the **Bureau of Water Use Efficiency (BWUE)** and the Indian Plumbing Association (IPA) have signed a MoU with the aim of achieving a **Water Positive India.**

Background:-
- The MoU focuses on creating **awareness and promoting rainwater harvesting structures, low-flow fixtures and sanitary ware, treatment of grey and black water, and water audit of the built environment.**

About the Bureau of Water Use Efficiency (BWUE):-
- **Establishment: 2022.**
- **HQ: New Delhi.**
- **Ministry: Ministry of Jal Shakti.**
- The Bureau of Water Use Efficiency (BWUE) has been set up under the scheme of the **National Water Mission.**

Functions of said Bureau:-
- To plan and execute a **nationwide program for the promotion of efficient use of water** in irrigation, domestic water supply, and municipal and/or industrial uses in the country.
- To make necessary regulatory directions to **promote Water Use Efficiency.**
- **Prescribing guidelines for water conservation** codes, standardizing and developing codes and facilitating their notification from concerned authorities.
- **Developing standards for water-efficient** fixtures, appliances, sanitary wares and other equipment using water in both urban/rural areas.
- Evolving a system of **efficiency labelling.**
- Evolve a system for **incentivizing promotional efforts** to increase water use efficiency.
- **Create a Resource Centre and Data Bank** related to various aspects of Water Use Efficiency.
- **Promote research and development** including research in the field of water conservation.

Indian Plumbing Association (IPA)
- **Establishment: 1993**
- It is the apex body of plumbing professionals in the country.

Objectives of IPA:-
- To uplift the dignity of the profession by encouraging members to:
  o Adopt correct **professional practices. (Catch The Rain Awareness Generation Campaign)**
  o Adhere to **ethical codes of conduct.**
  o Aim for the **highest standards of workmanship.**
- Promote and foster **healthy relationships** within the fraternity.

- To promote the **advancement of plumbing services** in the country by:
  - o **Organizing seminars, exhibitions**, and symposiums to educate members of the trade and the general public.
  - o **Providing a platform for the dissemination of information and exchange of ideas** on matters related to the plumbing profession.
  - o **Establishing harmonious means of communication** to facilitate better interface between the plumbing community, government/quasi-government agencies, statutory bodies, NGOs and private agencies.
  - o Establishing **training and education programmes** to create plumbing professionals.

Mission of IPA:-
  - o **Redefining Plumbing Standards** in India.
  - o Striving for an **overall improvement** of the plumbing profession in India at par with international standards.
  - o **Active participation** with the global body in the plumbing profession.

National Water Mission:
- It is one of the eight missions launched under the National Action Plan on Climate Change (NAPCC) for combating the threats of global warming. (Jal Jeevan Mission)
  - o **NAPCC:** it is a Government of India's programme launched in 2008 to mitigate and adapt to the adverse impact of climate change.
- **Launched: 2008.**
- **Ministry: Ministry of Jal Shakti.**
- **Objective of the National Water Mission:-**
  - o To conserve water.
  - o To minimise the wastage of the water.
  - o To ensure equitable distribution across the country and within States through integrated water resources management.
- **Goals of the National Water Mission:-**
  - o **Comprehensive water database** in the public domain and assessment of the impact of climate change on water resources.
  - o Promotion of **citizen and state actions for water conservation, augmentation and preservation.**
  - o Focused **attention to vulnerable areas** including over-exploited areas.
  - o **Increasing water use efficiency by 20%.**
  - o Promotion of **basin-level integrated water resources management.**

MUST READ: National Water Policy
SOURCE: PIB

Ubinas volcano	**Context:** Recently, Peru declared a state of emergency for 60 days in areas around **Ubinas volcano**. **About Ubinas volcano:-** • Ubinas is an **active stratovolcano. (Volcano)** o **Stratovolcano:** it is a conical volcano built up by many layers (strata) of hardened lava. • It is located in the **Moquegua Region of southern Peru**, approximately 60 kilometers east of the city of Arequipa.

- It is part of the **Central Volcanic Zone of the Andes** and stands at an elevation of 5,672 meters above sea level.
- The volcano's summit contains a 1.4-kilometer-wide and 150-meter-deep **caldera**, within which lies a smaller crater.
  - This distinct feature adds to the volcano's geological significance.
  - **Caldera:** it is a large cauldron-like hollow that forms shortly after the emptying of a magma chamber in a volcano eruption.
- **Ubinas I and Ubinas II:** The volcano exhibits an upwards-steepening cone shape, with a notable notch on its southern side.
- The **lower part** is referred to as **Ubinas I** while the steeper upper section is known as **Ubinas II**.
- This represents different stages in the **volcano's geological history.**
- The region where Ubinas is situated falls within the **Ring of Fire.**
  - **Ring of Fire:** an area around the Pacific Ocean known for its high volcanic and seismic activity.

History of Volcanic activity:-

- Ubinas is recognized as the **most active volcano in Peru. [(Volcanic eruption at Mount Semeru)](#)**
- It has a history of **small to moderate explosive eruptions** and persistent degassing.
- **Notable Eruptions:** The volcano has experienced notable eruptions throughout history, including the **2006–2007** event that resulted in eruption columns, ash fall, health concerns, and evacuations in the region.
- **Recent Activity:** From **2013 to 2017**, Ubinas exhibited lava flow within the crater, accompanied by ash falls, leading to further evacuations in nearby towns.

MUST READ: [Mt. Mauna Loa](#)
SOURCE: [AIR](#)

River Yamuna	**Context:** Evacuation of people from low-lying areas around the river **Yamuna was undertaken.**
	About Yamuna:-
	• **Origin:** It originates from the **Yamunotri Glacier.**
	   o **Yamunotri Glacier**: it lies on the southwestern slopes or Banderpoonch Peak, in the **Uttarkashi district of Uttarakhand.**
	• Yamuna joins the Ganges (Ganga) River near Prayagraj (Allahabad).
	• **Drainage Basin:** it flows along the states of **Uttarakhand, Himachal Pradesh, and Haryana** and enters **Delhi** and **Uttar Pradesh.**
	• It is the **largest tributary of the Ganga** in the northern plains. [(Cleaning of River Ganga)](#)
	• **Total length**: from its origin till Allahabad is **1,376 km.**
	• It creates the highly fertile alluvial, Yamuna-Ganges Doab region between itself and the Ganges in the Indo-Gangetic plain.
	• **Important Cities:** The cities of Bhagpat, Delhi, Noida, Mathura, Agra, Firozabad, Etawah, Hamirpur, and Allahabad lie on its banks. [(Sutlej-Yamuna Link Canal Project)](#)
	• **Tributaries of Yamuna:-**
	   o Yamuna is joined by its biggest tributary, the **Tons River** near Dehradun, Uttarakhand.
	   o **Right bank tributaries:** Chambal**,** Hindon, Sarda and Giri rivers.
	   o **Chambal River** is Yamuna's biggest tributary right bank tributary. [(National Chambal Sanctuary)](#)

	o **Left bank tributaries:** Betwa and Sindh. **MUST READ: Yamuna Pollution** **SOURCE: THE HINDU**
Shelf cloud	**Context:** Massive '**shelf cloud**' formation was spotted in Haridwar, Uttarakhand recently. **Background:-** • Video featuring clouds that resemble a majestic snow-covered mountain has sparked curiosity about this extraordinary weather phenomenon. **About Shelf Cloud:-** • Shelf clouds are a type of **Arcus cloud** characterized by a **low-lying, horizontal formation.** o **Arcus cloud:** a low, horizontal cloud formation, usually appearing as an accessory cloud to a cumulonimbus. • They appear as a **wedge-shaped structure beneath the main cloud** base and typically form on the leading edge of a storm. (Cloudbursts) • They resemble a **shelf hanging from the sky.** • It is a **wide, low cloud** that **appears before a big storm.** • They are usually **dark and ominous-looking** due to the condensation and the presence of rain or hail within the storm. • Shelf clouds **produced by thunderstorms are always preceded by a rush of dry and cold air** ahead of the cloud, with **rain arriving after the shelf cloud has passed overhead.** **Formation of shelf clouds:-** • Shelf clouds are formed **when a mass of cold, dense air forcefully interacts with a warmer air mass.** • When **warm, moist air is lifted rapidly** by an advancing thunderstorm or cold front Shelf clouds are formed. **Safety concerns:-** • Shelf clouds are typically **found in conjunction with thunderstorms**, which can **bring strong winds, heavy rainfall, and lightning. (Lightning)** • Their presence often suggests the **potential for severe weather conditions, prompting the need for caution and preparedness.** **MUST READ: Cloud Wars** **SOURCE: THE HINDU**
Gomti River	**Context**: A 2020 order declaring **Gomti** a 'non-perennial river' have drawn criticism recently. **Background:-** • A three-year-old government order (GO) issued by the irrigation department of the Uttar Pradesh government declaring the Gomti as a "non-perennial river" has drawn flak from water experts and river rights activists. • The GO has **surfaced recently** but was issued on September 3, 2020.

About Gomti River:-
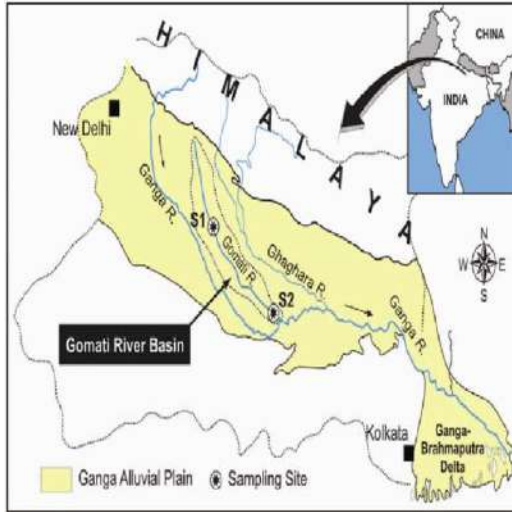
- Gomti is a **tributary of the Ganga River. (Himalayan River System)**
- **Origin:** It originates near Mainkot, from **Gomat Taala Lake** also known as Fulhar Jheel in Madhotanda. This is located around 30 kilometers from Pilibhit town in **Uttar Pradesh(UP).**
- **Drainage and End:** The River flows through **Sitapur, Lucknow, Barabanki, Sultanpur and Jaunpur** before meeting the Ganga at Kaithi, **Ghazipur district. (Linking Rivers)**

Ecological Importance of Gomti River:-
- The River serves as a **lifeline for the ecosystem it nurtures.**
- Its waters support a rich biodiversity, providing **habitat for various aquatic species**, including fish, turtles, and waterfowl.
- The river basin is also **home to a diverse range of flora**, including submerged plants, floating vegetation, and riparian trees.
- The Gomti River plays a crucial role in **maintaining the ecological balance** and contributing to the overall health of the region.

Cultural Significance of Gomti River:-
- It has deep cultural and historical roots, being **associated with ancient tales and legends**.
- It holds great significance in Hindu mythology, as **it is believed to be a sacred river** that purifies the souls of those who take a dip in its waters.
- The banks of the river are dotted with **numerous ghats, temples, and shrines,** attracting pilgrims and tourists alike.

Significance for Agriculture:-
- The fertile lands along the banks of the Gomti River provide **excellent agricultural opportunities** for the surrounding communities.
- The river's waters are **extensively used for irrigation,** enabling the cultivation of crops such as rice, wheat, sugarcane, and vegetables.
- The agricultural practices supported by the Gomti River **contribute significantly** to the **local economy and food security.**

MUST READ: Cleaning of River Ganga
SOURCE: DOWN TO EARTH

Gulf Stream	**Context:** Recent studies have warned that the **Gulf Stream** system of warm ocean currents could collapse as early as 2025.
	Background:-
	• The study's author at the University of Copenhagen said that other scientists had warned about the potential collapse of the **Atlantic Meridional Overturning Circulation** (AMOC).
	   ○ **AMOC:** t is a large system of ocean currents operating In the Atlantic, which circulates the waters between the north and the south.
	   ○ It plays a vital role in redistributing heat around the Earth and regulating global climate patterns.

About Gulf Stream:-

- The Gulf Stream is a **strong ocean current. (Ocean Currents)**
- It carries **warm water from the Gulf of Mexico into the Atlantic Ocean.**
- **Location:** It extends all the way up the **eastern coast of the United States and Canada.**
- **Origin:** It originates in the **Gulf of Mexico.**
- **Formation:** It is primarily formed by the **convergence of warm waters from the Caribbean Sea and the Gulf of Mexico.** (Upwelling and Downwelling)
  - o It then **travels northward** along the eastern coast of the United States.
- The Gulf Stream is **several hundred kilometers wide.**
- It can flow at an **average speed of about 2.5 meters per second.**
- The Gulf Stream is part of a general **clockwise-rotating system of currents** in the North Atlantic.
- It is fed by the westward-flowing **North Equatorial Current** moving from North Africa to the West Indies.

Importance of Gulf Stream:-

- **Temperature Regulation:** It moderates the temperatures along the eastern coast of North America, keeping the coastal areas warmer in winter and cooler in summer.
- **Maritime Navigation:** It provides a fast and efficient route for ships travelling between North America and Europe.
- **Ocean Circulation:** The Gulf Stream is an essential part of the larger oceanic circulation system known as the Atlantic Meridional Overturning Circulation (AMOC).

MUST READ: Deep Ocean Mission (DOM)
SOURCE: BBC NEWS

Batagaika Crater	**Context:** Recent studies show that the **Batagaika Crater** can be a warning sign for the Earth. **Background:-** • As per the study, the soil beneath the slump contains dangerous amounts of organic carbon that will be released into the atmosphere as the permafrost thaws, further fueling the planet's warming. **About Batagaika Crater:-** • The Batagaika crater, the **world's largest permafrost crater.** • It is **one kilometer long.** • **Location: Sakha Republic, Russia.** • **Depth:** It reaches depths of up to 100 meters. • In the 1960s, after deforestation led to the melting of the underground permafrost, it caused the land to sink. Over the years, the crater has only expanded and is locally called 'the cave-in' or 'mega-slump'. • **Formation:** Scientists believe that the crater is the result of a melting permafrost land, which was frozen during the Quaternary Ice Age 2.58 million years ago. • The locals in Russia's Sakha Republic call it the "**gateway to the underworld.**"
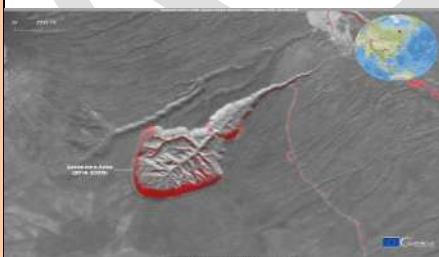
- o The term reflects the crater's vastness and the fact that it seems to **offer a glimpse into the Earth's past.**
- **Significance of Batagaika crater:** Scientists believe that the crater is the result of a melting permafrost land, which was frozen during the Quaternary Ice Age 2.58 million years ago.
- It has been observed in recent times that the Batagaika crater has been expanding.

Cause of Batagaika Crater's Expansion:-
- The expansion of the Batagaika crater can be attributed to the **melting of permafrost**, a phenomenon triggered by **global warming.**
  - o **Permafrost:** a thick subsurface layer of soil that remains below freezing point throughout the year, occurring chiefly in polar regions. (Permafrost)

Causes of Permafrost Thawing:-
- **Rise in global temperatures** due to climate change.
  - o Human activities, particularly the burning of fossil fuels, have released vast amounts of greenhouse gases into the atmosphere.
  - o These gases **trap heat and result in a warming climate**, which directly affects regions like Siberia with large permafrost areas.
- **Deforestation:** It exposed the permafrost to sunlight, accelerating its melting.
- **Other human activities:** Infrastructure development, and industrial activities, can further disturb the delicate balance of these frozen landscapes.

Implications of the expansion on the environment:-
- As the permafrost thaws, enormous quantities of organic **carbon are released into the atmosphere**.
- This further contributes to the **intensification of global warming**.
- It will pose a significant **challenge to climate change mitigation efforts.**
- The thawing permafrost has had severe consequences on northern and northeastern Russia, leading to **infrastructure damage.**
  - o These include: Buckling roadways, splitting houses, and disrupting pipelines.

MUST READ: Permafrost and Pandemic
SOURCE: DOWN TO EARTH
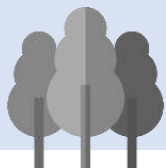
ENVIRONMENT

Wildlife Crime Control Bureau (WCCB)	**Context:** Recently, the **Wildlife Crime Control Bureau (WCCB)** issued a 'red alert' against poachers and hunters in tiger reserves.

Background:-
- The red alert is issued for six tiger reserves across India, including two of Madhya Pradesh and three districts of MP, Chhattisgarh and Maharashtra.
- The Wildlife Crime Control Bureau (WCCB) of the Ministry of Environment, Forest and climate change has issued a 'red alert' directing the authorities to visit all tiger reserves.

About Wildlife Crime Control Bureau (WCCB):-
- **It is a statutory** multi-disciplinary body established under **Wildlife (Protection) Act (WLPA), 1972.**
- **Objective:** to combat organized wildlife crime in the country. (WCCB wins Asia Environmental Enforcement Award-2020)
- **Establishment: 2007.**
    - It was established by amending the **Wildlife (Protection) Act (WLPA), 1972**, a special Act to protect the wildlife and fauna in the country.
- **Ministry: Ministry of Environment, Forest and climate change.**
- **HQ: New Delhi.**
- **Regional offices**: Delhi, Mumbai, Kolkata, Chennai and Jabalpur
- **Sub-regional offices**: at Amritsar, Guwahati, and Cochin; and five borders.

Functions of WCCB:-
- To collect and collate **intelligence related to organized wildlife crime activities**.
- To **disseminate the same to State** and other enforcement agencies for immediate action so as to apprehend the criminals.
- To establish a **centralized wildlife crime data bank**;
- To **coordinate actions by various agencies** in connection with the enforcement of the provisions of the Act.
- To **assist foreign authorities and international organizations** concerned to facilitate coordination and universal action for wildlife crime control.
- **Capacity building of the wildlife crime enforcement agencies** for a scientific and professional investigation into wildlife crimes and assist State Governments.
- To ensure success in **prosecutions related to wildlife crimes**.
- To advise the Government of India on **issues relating to wildlife crimes** having national and international ramifications.
- To make **relevant policies and laws.**
- It also assists and advises the Customs authorities in the **inspection of the consignments** of flora & fauna as per the provisions of the Wild Life Protection Act, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and EXIM Policy governing such an item.

MUST READ: Wildlife Institute of India (WII)
SOURCE: HINDUSTAN TIMES

Sturgeon species	**Context:** Recent reports suggest that poaching is the biggest threat to **sturgeon species** in the **River Danube.**
	Key Findings of the report:-

Key Findings of the report:-
- As many as 337 cases of **illegal activities involving the fish** were reported from 2016-2022 in the Danube River.
- **Bulgaria** recorded the **highest number (130)** of such cases that included violations of fishing bans and regulations, seizures of illegal fishing gear and the illicit trade of sturgeon and sturgeon-based products.
- It was followed by **Romania (125) and Ukraine (82).**
- **Main hotspots:** Vratsa in Bulgaria, Tulcea in Romania, and Odesa in Ukraine.
- **Incidents of trafficking:** As much as 20 per cent of the sturgeon samples collected from the fish markets in these countries were wild fish and did not come from farms.
  - This was another indicator of the **rampant sturgeon trafficking occurring** in these places.
- **Corruption:** the report highlighted that the poaching rings and illegal fishers often work with the connivance of **corrupt officials of the government's fishing departments who accept bribes.**
- **Mitigation Solutions**: Innovative approaches involving advanced technology have helped curb the menace.
  - **Inter-agency cooperation** and coordination for controlling the different parts of the trade chain can also be helpful.

About Sturgeon species:-
- Sturgeons are **ancient migratory fish.**
- Sturgeons have existed since the time of dinosaurs, for about **200 million years.**
- They are called '**living fossils'** because their appearance has altered very little over the years.
  - **Living Fossil**: an organism that has remained unchanged from earlier geologic times and whose close relatives are usually extinct.
- They are considered the **world's most endangered species**.
- **Habitat:-**
  - There are **27 species of sturgeons** and paddlefishes distributed across the Northern Hemisphere.
  - While some species inhabit only freshwater, **most species are anadromous**.
  - **Anadromous**: spawning in freshwater but spending much of their life history in marine or brackish environments.
- **Danube sturgeons** live mostly in **the Black Sea,** migrating up the Danube and other major rivers to produce eggs:
- **Three of the four sturgeon species** found in the **River Danube**:—
  - **Beluga: critically endangered (IUCN)**
  - **International Union for Conservation of Nature (IUCN):** Red List of Threatened Species.
  - **Stellate: critically endangered (IUCN)**
  - Russian sturgeon: **critically endangered (IUCN)**
  - Sterlet: **Endangered (IUCN) (IUCN updates the Red list of species)**

- Two more species of the family, the European sturgeon and the ship sturgeon, that used to swim in the waters of the Danube have been **declared extinct locally**.
- **Significance:** Because the sturgeons live for so many years, mature late and spawn with long intervals, **they take a long time to recover from environmental and human pressures**.
  - o This makes them **great indicators** for the health of the river and other ecological parameters.

MUST READ: Invasive Species
SOURCE: DOWN TO EARTH

Gucchi	**Context:** Recent reports show the impact of climate change on Kashmir's gucchi mushroom pickers.
	Background:-
	- Unpredictable weather patterns, early springs, and above-average temperatures have left gucchi mushroom hunters in distress, facing another season of low yield for the second consecutive year.
	About Gucchi:-
	- The gucchi mushroom is the **local name for morel.**
	o **Morel:** a genus of edible fungi.
	- Professional chefs and amateur foodies prize it alike for its **nutty, earthy flavour.**
	- **Family:** it is a **species of fungus** from the **family Morchellaceae of the Ascomycota.**
	- **Appearance:** They are **pale yellow in color** with large pits and ridges on the surface of the cap.
	- Gucchis can vary in color from **blonde to dark black.**
	- **Habitat:** It is found in **temperate forests.**
	o It is **primarily obtained from** the forests and pastures of **Doda district, Jammu and Kashmir.**
	- **Distribution:** It is also found in the high-altitude areas of **Kupwara, Pahalgam, Shopian, Kishtwar and Poonch of Jammu & Kashmir.**
	- **Characteristic:** It is one of the **costliest mushrooms** in the world, which is known for its spongy, honeycombed head and **savory flavor.**
	- The mushroom is often coveted, not only for its taste but because it is **very difficult to find.**
	Benefits of Gucchi:-
	- They are rich in **antioxidant and antimicrobial properties** that prevent health issues including heart diseases and diabetes by removing reactive oxygen species that harm the body.
	- They are also considered a **rich source of protein, potassium, copper, carbohydrates and Vitamin B.**
	- The **exotic wild mushrooms** are used in pulaos and served during celebratory occasions such as marriages.
	- It is said to have **medicinal and anti-inflammatory properties.**
	MUST READ: Rhododendrons
	SOURCE: DOWN TO EARTH
High Seas Treaty	**Context:** Recently, the UN adopted the Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ) or **the High Seas Treaty.**
	Background:-
	About High Seas Treaty:-

- It is an international agreement on the **conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction. (UN High Seas Treaty)**
- The UN adopted the Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ) or the High Seas Treaty in 2023.
- **Objective**: to achieve a more holistic management of high seas activities, which should better balance the conservation and sustainable use of marine resources.

- **Jurisdiction:** It encompasses the **high seas, beyond the exclusive economic zones or national waters of countries.**
- This new instrument is being developed within the framework of the UNCLOS (United Nations Convention for the Law of the Sea). (BBNJ Treaty)
- The agreement **has five aspects:**
  - **Environmental impact assessments** for activities taken up on high seas.
  - **Conservation** of marine genetic resources.
  - **Capacity building**.
  - **Technology transfer.**
  - **Crosscutting issues** such as institutional structure and financial support.

UNCLOS(United Nations Convention for the Law of the Sea)
- It is an international agreement that establishes the legal framework for marine and maritime activities.
- **Historical Background**: The Convention, which concluded in the year 1982, replaced the quad-treaty of 1958.
- **Establishment**: It came into effect in the year **1994.**
- It is the **only international convention, which stipulates a framework for state jurisdiction in maritime spaces**.
- It provides a different **legal status to different maritime zones.**
- It divides marine areas into **5 zones :**
  - Internal-waters
  - Territorial seas
  - Contiguous Zone
  - Exclusive Economic Zone (EEZ)
  - Continental shelf or High seas
- **India** has been a party to the convention **since 1995.**

MUST READ: Deep-Sea Mining
SOURCE: THE HINDU

Indian Grey Hornbill	**Context:** Recently, the **Indian Grey Hornbill** was sighted in Puducherry for the first time. **About Indian Grey Hornbill:-** • The Indian grey hornbill **(Ocyceros birostris) is the smallest in the Hornbill family. (Hornbills)** • **Habitat:** Foothills of Southern Himalayas.

- o It is one of the few hornbill species **found in urban areas** in many cities where they are able to make use of large trees in avenues.
- **Distribution:** Indian subcontinent; found from north-east Pakistan and south Nepal east to north-west Bangladesh and south throughout most of India except in Assam.
  - o It is a common hornbill found on the **Indian subcontinent.**
- It is **commonly sighted in pairs**.
- These birds are known to be **arboreal.**
  - o **Arboreal:** spend most of their time on tall trees.
  - o They may descend for food and to collect mud pellets for nesting.
- **Appearance:-**
  - o It has grey feathers all over the body with a light grey or dull white belly. , Unlike a lot of other birds, **the male and female look similar.**
- They play an essential role in the ecosystem as prime **dispersers of seeds.**
- **Conservation status:-**
  - o IUCN: **Least Concern. (IUCN updates the Red list of species)**

Sankaraparani River:
- The Sankaraparani River is a river in Tamil Nadu state.
- It originates on the western slope of the Gingee Hills in Viluppuram District, and flows southeastwards to empty into the Bay of Bengal south of Pondicherry.
- The Sankaraparani is also known as Varahanadi or Gingee River.

MUST READ: Hornbill Festival
SOURCE: THE HINDU

Mukurthi National Park	**Context:** Recently, Tamil Nadu Forest Department stepped up vigil around **Mukurthi National Park** in Nilgiris to curb poaching.

About Mukurthi National Park:-
- **Location: South East of the Nilgiri plateau, Tamil Nadu.**
  - o It is located on the high altitudes of the Nilgiris, consisting of **temperate shola forests.**
- It has been created **to protect the Nilgiri Tahr** which was the state animal of Tamil Nadu, with the Mukurthi peak and its surroundings being the pivotal point.
- **Rivers:-**
  - o The Mukurthi National Park hillsides are the source of the **Pykara River**.
  - o The other important rivers originating from surrounding areas are **Kabini, Chaliyar and Bhavani.**
- Mukurthi National Park peaks act as the **main source of water** for not only the Nilgiris but other regions in the plains.
- The Mukurthi National Park area **is a Hotspot** and a **core area in the Nilgiri Biosphere Reserve Reserve.** (Anamalai Tiger Reserve)
  - o **Nilgiri Biosphere Reserve:** the first Biosphere Reserve created in India the in the year 1986.
- **Vegetation:** Sholas and grasslands.
  - o The area is primarily grasslands interspersed with numerous isolated, compact, sharply defined montane wet temperate mixed forests **locally termed as 'Sholas'.**

	• **Fauna:** Nilgiri Tahr (state animal of Tamilnadu), sambar, barking deer, Nilgiri marten, otter, jungle Cat, jackal etc. **SOURCE: THE HINDU**
Ramgarh Visdhari Reserve	**Context:** Recently, a Tigress was spotted with three cubs in **Ramgarh Visdhari Reserve (RVTR).** **About Ramgarh Visdhari Reserve:-** • **Location: Bundi, Rajasthan.** • **1982:** The area was **declared a sanctuary** • **2022:** Became a **tiger reserve**. • It is Rajasthan's **fourth tiger reserve** after **Ranthambore, Sariska and Mukundra.** • **Vegetation:** It comprises **hilly dry deciduous forests** on Vindhyan formations. • **Flora:** Mango, Dhok, Khair and Salar. • **Fauna:** It is home to a large number of wild animals such as the **Indian Wolf, leopard, striped hyena, sloth bear, golden jackal, chinkara, nilgai and fox.** • **Important Historical and cultural sites:** Bhimlat, Ramgarh Palace, etc. **Significance of the creation of Ramgarh Vishdhari tiger reserve:-** • While Ramgarh doesn't have a high tiger population, it plays a critical role in the **movement of tigers.** • The newly created tiger reserve will **connect the Ranthambore Tiger Reserve in Sawai Madhopur district in the northeast with the Mukundra Hills Tiger Reserve in the Kota** district on the southern side. (Valmiki Tiger Reserve) • This reserve will also **help control overpopulation and** the consequent effect of **overcrowding in Ranthambore.** **MUST READ: Cheetahs and Others: know the 7 big cats** **SOURCE: HINDUSTAN TIMES**
Commission on Genetic Resources for Food and Agriculture (CGRFA)	**Context:** The 19th session of the **Commission on Genetic Resources for Food and Agriculture (CGRFA)** was held in Rome, Italy. **About Commission on Genetic Resources for Food and Agriculture (CGRFA):-** • **Established in 1983.** • The Commission on Genetic Resources for Food and Agriculture (CGRFA) is the **only permanent intergovernmental body** focused on conserving **all types of biodiversity for food and agriculture.** • **Members:** The Commission consists of **179 Member States and the European Union**. ○ Membership of the Commission is **open to all Members of FAO. (42nd Session of FAO Conference)** • **Objective:** to promote international policies for the sustainable use and conservation of genetic resources for food and agriculture, while also ensuring that benefits derived from biodiversity are fairly and equitably shared. • The Commission offers a unique platform for its members and other stakeholder to promote **a world without hunger by fostering the use and development of the whole portfolio of biodiversity** important to food security and rural poverty.

- The CGRFA meets regularly to address policies on genetic resources for food and agriculture.(GM Crops and their regulation)

19th session of the CGRFA

- **Venue**: FAO headquarters in Rome, Italy.(Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture (WG AnGR))
- **Date:** from 17 to 21 July 2023.
- **Organized by:** Food and Agriculture Organization (FAO).
- **Focus areas:** the **state of the world's forest and plant genetic resources, access and benefit-sharing policies, and biotechnologies for the conservation and sustainable use of genetic resources.**
- The Commission will also discuss:-
  - A Framework for Action **on Biodiversity for Food and Agriculture.**
  - the **role of genetic resources** for food and agriculture in mitigation of and adaptation to climate change
  - microorganism and invertebrate genetic resources, including pollinator and biological control agents

MUST READ: Food Security in India
SOURCE: DOWN TO EARTH

Gambusia fish	**Context:** The Andhra Pradesh government released 10 million **Gambusia fish** to the water bodies to combat mosquito-borne diseases like **malaria and dengue.** **About Gambusia fish:-** • Gambusia affinis is a **freshwater fish. (Puffer Fish)** • It belongs to the **genus Gambusia.** • **Distribution**: Gambusia affinis (G affinis) is native to the waters of the **southeastern United States**. • G affinis has a sister species, **Gambusia holbrooki (G holbrooki),** also known as the eastern mosquito fish. • The fish has a **high breeding capacity**. • A single female may produce between **900 and 1,200 offspring during its lifespan.** • This fish is described as a **very hardy fish** and can **adapt to wide variations in temperature** as well as to the chemical and organic content of the water but does not tolerate very high organic pollution. **Mosquito Fish:-** • It is also known as **mosquito fish and** has been a part of **mosquito-control strategies for over a century** in various parts of the world, including India. (Malaria Vaccine) • A single full-grown fish eats about **100 to 300 mosquito larvae per day.** • Mosquitofish has been part of various malaria control strategies in India **since 1928,** including the **Urban Malaria Scheme.** • The International Union for Conservation of Nature (IUCN) declared Gambusia one of the **100 worst invasive alien species in the world.** ○ **Invasive alien species:** animals, plants or other organisms that are introduced by humans, either intentionally or accidentally, into places outside of their natural range, negatively impacting native biodiversity, ecosystem services or human economy and well-being. • It is declared an **invasive alien species in India** as well.

	• In India, mosquitofish affected the ecosystem health of the lake after its introduction into the **Nainital Lake** in the 1990s to control malaria. **MUST READ: Zebrafish** **SOURCE: DOWN TO EARTH**

Gharials	**Context:** Recently, America's largest reptile sanctuary wants to import **gharials** from India.
	Background:-
	• **The Phoenix Herpetological Society** has requested a permit to import gharials and crocodiles from Madras Crocodile Bank Trust.
	About Gharials:-
	• Gharials are a type of Asian crocodilian distinguished by **their long, thin snouts. (Gharials)**
	• They are **fish-eating crocodiles.**
	• **Habitat:** Gharials reside **exclusively in river habitats** with deep, clear, fast-flowing waters and steep, sandy banks.
	• **They are sweet water crocodiles.**
	• **Indicator Species:** They are also a crucial indicator of clean river water.
	    o **Indicator species**: living organisms that tell us that something has changed or is going to change in their environment.
	Distribution of Gharials:-
	• **Historical distribution**: Gharials were once widely distributed in the large rivers that flow in the **northern part of the Indian subcontinent.**
	• **Current distribution:** Today, their major population occur in **three tributaries of the Ganga River**: **the Chambal and the Girwa Rivers in India and the Rapti-Naryani River in Nepal.** (National Chambal Sanctuary)
	• The Gharial reserves of India are located in three States – **Uttar Pradesh, Madhya Pradesh and Rajasthan.**
	Major Threats:
	• **Alteration of habitat** - Throughout the present range of the Gharial, the rivers have been dammed, and diverted for irrigation and other purposes leading to **seasonal drying of once perennial rivers.**
	• **Depletion of prey base:** increased use of gill nets is rapidly killing many adults as well as subadults.
	• **Harvesting of eggs and poaching**: the use of its body parts as medicines has been traditional and is reported from Nepal and, occasionally, in India.
	Conservation status of Gharials:-
	• **IUCN: Critically Endangered**
	• **IWPA: Schedule I**
	• **CITES: Appendix I**
	Crocodiles in India:-
	India has three species of Crocodiles, namely:-
	• **Gharials**
	    o IUCN: Critically Endangered
	• **Mugger crocodile**
	    o IUCN Status: Vulnerable
	• **Saltwater crocodile**
	    o IUCN Status: Least Concern.

	MUST READ: Thalattosuchian **SOURCE: THE HINDU**
India Climate Energy Dashboard (ICED) 3.0	**Context:** Recently, NITI Aayog released the **India Climate Energy Dashboard (ICED) 3.0.** **About India Climate Energy Dashboard (ICED) 3.0:-** • It is India's **one-stop platform for near real-time data** on the energy sector, climate, and related economic datasets based on government-published sources. • **Developed by: NITI Aayog** in collaboration with the energy and climate think-tank **Vasudha Foundation.** • ICED provides Near **Real-Time Data with in-built Analytics** to track Climate Action Progress. (Climate Change & Natural Gas Sector) **Salient Features of (ICED) 3.0:-** • It is developed as a **user-friendly platform.** • It enables **users to freely access and analyze datasets** using an analytical engine. • It will **facilitate insights and enhance understanding of the energy and climate sectors.** (Climate Change Performance Index (CCPI)) • The Portal will **draw insights from the available data parameters**. • This **dashboard offers more than 500 parameters, over 2000 infographics**, and a number of interactive visualizations, allowing users to gain a holistic understanding of India's energy sector. • The dashboard also offers **information on economy and demography** for comparative study and **its combined analysis along with the energy and climate issues.** **MUST READ: Renewable Energy Transition** **SOURCE: PIB**

Mhadei Wildlife Sanctuary	**Context:** The Goa bench of the Bombay High Court has directed the Goa government to notify the **Mhadei Wildlife Sanctuary** as a tiger reserve.
	
	About Mhadei Wildlife Sanctuary:-
	
	Location: in the northeast of Goa, in the taluka of Sattari.
	• Its official **declaration as a wildlife preserve** came **in 1999.**
	• The **Mhadei River,** known downstream as the Mandovi River, the lifeline of the state of Goa, originates in Karnataka, passes through the Mhadei Wildlife Sanctuary and meets the Arabian Sea at Panaji in Goa.
	   o The whole sanctuary acts as a catchment for the river.
	• **Prominent Waterfalls:** Vazra Sakla Falls and the Virdi Falls.
	   o The cliff face near the Vazra Falls is notable for being the nesting grounds of the **critically endangered Long-billed vultures. (Wildlife Protection)**
	• It has been declared an **International Bird Area** because of the presence of the Nilgiri wood pigeon, Malabar parakeet, Malabar grey hornbill, Grey-headed Bulbul, Rufous babbler, White-bellied blue-flycatcher and Crimson-backed sunbird.

	• The three **highest peaks in Goa** are situated in the hill ranges of the sanctuary. They are **Sonsogod (1027 mts), Talavche Sada (812 mts) and Vageri (725 mts)**.
	• **Flora:-**
	   o The area of the sanctuary is thickly forested with **moist deciduous vegetation and some evergreen species** too.
	   o The sanctuary is particularly well known for its **sacred groves** that protect rare and indigenous trees.
	• **Fauna:-**
	   o **Commonly seen animals:** Indian gaur, Barking deer, Sambar deer, Asian palm civet, small Indian civet, Wild boar, Indian hare, Ruddy mongoose, Black-faced langur and Bonnet macaque.
	   o **Rarely seen:** Black Panther, Sloth bear, Leopard, Tiger, Dhole, Jungle cat, Mouse deer, Giant squirrel, Flying squirrel, Indian pangolin and the Slender loris.
	MUST READ: Anamalai Tiger Reserve
	SOURCE: THE INDIAN EXPRESS

Silver cockscomb	**Context:** Studies have shown that **Silver cockscomb** is not a troublesome weed for Karnataka's Soliga tribe.
	Background:-
	• Silver cockscomb is a **troublesome weed.** (Expansion of the Invasive Plants)
	• If left unchecked, it can spread quickly and **suppress the growth of other crops**, affecting their yield.
	• But for the **Soliga tribe,** silver cockscomb is a nutritious leafy green vegetable that grows well even on fallow land and in drought-like conditions.
	About Silver cockscomb:-
	• Silver cockscomb is a **short-lived 50-60 cm-tall plant**.
	• It is also known as **Lagos spinach.**
	• **Scientific name: Celosia argentea** .
	• **Local Names:-**
	   o In Karnnada: Anne soppu
	   o In Marathi: Kurdu
	   o In Tamil: Pannai keerai
	• **Family: Amaranthaceae family.**
	   o The family includes **economically important plants** like **spinach, beetroot and quinoa**.
	• It bears **simple, spirally arranged leaves around the stem** with **pinkish or silky white flowers**.
	• It grows well even on fallow land and in **drought-like conditions.**
	• Its leaves have lower levels of **oxalic acid and phytic acid.**
	Uses of Silver cockscomb:-
	• It grows widely on farmlands across the country and most farmers use the plant as **fodder.**
	• **Soliga tribe** use it as a nutritious **leafy green vegetable**, as it is high in nutrients such as **beta-carotene and folic acids, and has vitamin E, calcium and iron.**
	• It is frequently used in **traditional Chinese and Indian medicine** for treating **eye diseases and ulcers. (WHO and Traditional Medicine)**
	About the Soliga tribe:-

	• They are an **indigenous tribe of Karnataka.** • **Location:** They reside in the peripheral forest areas near **Biligiri Rangana Hills** and **Male Mahadeshwara** in the Chamarajnagar district of Karnataka. • They are **the first tribal community** living inside the core area of a tiger reserve in India **to get their forest rights officially recognised by a court of law.** **MUST READ: New genus of parasitic flowering plant** **SOURCE: DOWN TO EARTH**

Ludwigia peruviana	**Context**: As per recent reports, **Ludwigia Peruviana** is threatening the elephant habitats in Tamil Nadu.
	Background:-
	• Ludwigia peruviana, has infested the majority of the hill station's swamps, where elephants used to find lush grass even in the summer.
	• It is among the 22 priority invasive plants in Tamil Nadu.
	About Ludwigia peruviana:-
	• Ludwigia peruviana is an **invasive aquatic weed. (Invasive alien plants in Nilgiri Biosphere Region)**
	• **Habitat:** it is originally native to **Central and South America.**
	• It is an **aquatic plant**, which is now challenging the existence of local vegetation in various swampy areas around the world.
	• It is a **perennial shrub.**
	    o **Perennial:** A plant that lives for more than two years.
	• It is **deciduous in cooler climates** and **evergreen in warmer tropical climates.**
	• It can **form floating islands** on the water's surface.
	• The plant can grow to a **height of about 12 feet.**
	• **Leaves are:-**
	    o Oval to lance-shaped with a pointed tip and narrow base.
	    o Hairy and prominently veined.
	• **Flowers are:-**
	    o Its flower is **pale yellowish** in colour.
	    o Each flower **lasts for only one day.**
	Issues with Ludwigia peruviana:-
	• It is an aquatic plant, which is now challenging the existence of **local vegetation** in various swampy areas around the world.
	• It **grows faster** in wetlands than other harmful weeds.
	• It has **shaken the balance of these perennial foraging grounds**, limiting the growth of grass and native plants that are palatable to elephants and other animals including gaur.
	• It **grows in swamps** and there is little scope to use machinery.
	• Even if Ludwigia is pulled out manually, the soft plant **easily breaks and it spreads again** from the root or broken stems that fall in the swamp
	
	Ways to control Ludwigia peruviana:-
	• **Prevention:** Reducing nutrient runoff into the waterway can limit growth.
	• **Physical removal:** Seedlings can be pulled or dug out.
	• **Disposal:** Plants can be destroyed by burning or deep burial.
	• **Slashing/Fire:** Larger infestations may be slashed and burnt.

	• **Chemical control:** Spraying glyphosate.
	• **Cut stump method:** Cut the main stems, and apply herbicide gel to the stump within 15 seconds of cutting.
	MUST READ: Water Hyacinth
	SOURCE: THE HINDU
Commission for Air Quality Management (CAQM)	**Context:** Recently, the **Commission for Air Quality Management (CAQM)** in the National Capital Region (NCR) has announced a revision in the existing **Graded Response Action Plan (GRAP).**
	About Graded Response Action Plan:-
	• **Formulated in 2016.**
	• It was officially notified in 2017 for **Delhi and the National Capital Region (NCR).**
	• The plan was formulated after several meetings were held by Environment Pollution (Prevention and Control) Authority (EPCA) with state government representatives and experts.
	• These are **institutionalized measures** to be taken when air quality deteriorates, hence work only as an emergency measure.
	• GRAP includes the **measures, which will be taken by different government agencies to prevent the worsening of the Air Quality** of Delhi-NCR and prevent PM10 and PM2.5 levels to go beyond the 'moderate' national Air Quality Index (AQI) category. (Air pollution)
	• If air quality reaches the **severe+ stage, GRAP talks about shutting down schools** and implementing the **odd-even road-space rationing scheme.**
	• The plan **requires action and coordination** among 13 different agencies in **Delhi, Uttar Pradesh, Haryana and Rajasthan (NCR areas).**
	Measures announced-
	Moderate to poor- (when PM2.5 is in the range of 61-120 or when PM10 is in the range of 101-350.):-
	• Heavy fines for garbage burning.
	• Close/enforce pollution control regulations in brick kilns and industries.
	• Mechanised sweeping on roads with heavy traffic and water sprinkling.
	• Strictly enforce a ban on firecrackers.
	Very Poor- (PM2.5 is in the range of 121-250 or PM10 is in the range of 351-430):-
	• Stop the use of diesel generator sets.
	• Enhance parking fee by 3-4 times.
	• Increase bus and Metro services.
	• Apartment owners to discourage burning fires in winter by providing electric heaters during winter.
	• Advisories to people with respiratory and cardiac conditions to restrict outdoor movement.
	Severe- (PM 2.5 over 250 or PM10 over 430):-
	• Close brick kilns, hot mix plants, and stone crushers.
	• Maximise power generation from natural gas to reduce generation from coal.
	• Encourage public transport, with differential rates.
	• More frequent mechanized cleaning of roads and sprinkling of water.
	Severe+ or Emergency- (PM 2.5 over 300 or PM10 over 500 for 48+ hours):-
	• Stop entry of trucks into Delhi (except essential commodities).

- Stop construction work.
- Introduce odd/even schemes for private vehicles and minimise exemptions.
- Task Force to decide any additional steps including shutting of schools.

Revised GRAP:

- The revised GRAP will come into force from **1st October 2023** and will be **applicable to the entire NCR.**
- The key revisions include the **enforcement of the National Green Tribunal** or Supreme **Court's order** on overaged diesel and petrol vehicles and as per extant statutes during 'Poor' Air Quality.
- In the case of 'Very **Poor' Air Quality**, remedial measures need to be intensified for the predominant sectors contributing to adverse air quality in each of such hotspots.
- **During 'Severe'** Air Quality, NCR State governments will impose s**trict restrictions on plying of BS III petrol and BS IV diesel Light Motor Vehicles (LMVs)** in Delhi and in the districts of Gurugram, Faridabad, Ghaziabad, and Gautam Buddh Nagar.
- If air quality reaches '**Severe** ', then NCR State governments might take a decision on **discontinuing physical classes** even for classes sixth to ninth, class 11th, and conduct lessons in an online mode.

About the Commission for Air Quality Management (CAQM):-

- **Establishment: 2020.**
- It was formed **by an ordinance** in October 2020.
- **HQ: Delhi. (CAQM)**
- The commission replaces the **Environment Pollution (Prevention and Control) Authority (EPCA).**
    - **EPCA:** it is a Supreme Court-mandated body tasked with taking various measures to tackle air pollution in the National Capital Region.
    - It was **notified in 1998** by Environment Ministry under **Environment Protection Act, 1986.**

Objectives of CAQM:-

- For **Air Quality Management in National Capital Region and Adjoining Areas. (Delhi and Air Pollution)**
- For better **co-ordination, research, identification and resolution** of problems surrounding the air quality index and
- For **matters connected therewith** or incidental thereto.

Powers of the CAQM:-

- The rulings by the Commission on air pollution will **override anything contained in any other law.**
- The powers of the Commission will also **supersede that of any other body** in matters of air pollution.
    - Therefore, in cases where conflict may arise between orders or directions issued by the other State governments, State Pollution Control Boards or even the Central Pollution Control Board, the orders of the Commission will prevail.
- The Commission will have the **power to take measures, issue directions and entertain complaints** "for the purpose of protecting and improving the quality of air in the National Capital Region".

- It will also **coordinate action taken by states on air pollution** and will lay down parameters for air quality and emission or discharge of environmental pollutants.
- It will also have **powers to restrict industries in any area**, carry out random inspections of any premises including factories and be able to close down an industry or cut its power and water supply in case of non-compliance.
- It will also be **monitoring the measures** taken by the States **to prevent stubble burning.**

Merits of CAQM:-

- **Effective Mechanism to tackle Pollution:** The permanent Commission envisages a multi-sectoral, public participatory, multi-state dynamic body for combating pollution on a war footing.
- **More Teeth:** It will now be **binding on state governments** to follow the directions of the Commission regarding air quality management.
    - It will also have **powers to restrict the setting up of industries** in vulnerable areas and will be able to conduct site inspections of industrial units.
- **Consolidated Approach:** The commission will have the power to coordinate with relevant state and central governments on the multi-sector plan including industry, power plants, agriculture, transport, residential and construction.
- **Penal Powers:** The penalty for non-compliance shall be **imprisonment of up to five years or a fine up to Rs 1 crore**, or both.
- **Relieves Supreme Court:** The Centre seeks to relieve the Supreme Court **from having to constantly monitor pollution levels** through various pollution-related cases.
- **Participatory Democracy:** the Commission would function under the **oversight of the elected representatives** with regular reports to the Parliament.

MUST READ: Initiatives and Measures for Prevention of Air Pollution
SOURCE: AIR
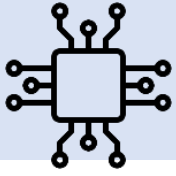
SCIENCE & TECHNOLOGY

Sickle Cell Anemia	**Context:** Prime Minister Narendra Modi inaugurated the **National Sickle Cell Anemia Eradication Mission 2047,** recently.
	Background:-

Background:-

- The **union budget of FY 2023-24**, announced to launch of a mission to eliminate sickle cell anemia by 2047.
- Prime Minister Narendra Modi will inaugurate the National Sickle Cell Anemia Eradication Mission 2047 in Lalpur village of Madhya Pradesh on 1st July 2023.
- The mission entails a focus on **awareness creation, universal screening of approximately seven crore people in the 0-40 years age group in affected tribal areas** and **counselling** through collaborative efforts of central ministries and state governments.
- **Objectives:-**
    o Eliminate SCA by 2047.
    o Create awareness about the disease.
    o The mission will screen seven crore people.
    o People in the age group 0 to 40 years are to be screened.
    o Tribal areas to be targeted.

About Sickle Cell Anaemia:-

- **Discovery:** in 1910 by **James Herrick.**
- Sickle cell anemia is a group of inherited disorders known as sickle cell disease.
- It affects the shape of **red blood cells.**
    o **Red blood cells:** contain hemoglobin, which carries oxygen to all parts of the body.
- **Cause:** It is transmitted by parents carrying a defective 'beta globin' gene.
- **Disease condition:** under normal conditions, the red blood cells being round and flexible move easily through blood vessels.
    o However, in sickle cell anemia, some of the red blood cells acquire the shape of sickles or crescent moons.
- These sickle cells become rigid and sticky.
- When they travel through small blood vessels, they are stuck and clog the blood flow.
- This can cause pain and other serious health problems such as infection, acute chest syndrome and stroke.
- The sickle cells also die early, which causes a constant shortage of red blood cells.

Symptoms:-

- **Chronic Anemia**: leading to fatigue, weakness, and paleness.
- **Painful episodes** (also known as sickle cell crisis): these can cause sudden and intense pain in the bones, chest, back, arms, and legs.
    o Delayed growth and puberty.

Mortality rate:-

- Mortality rate refers to the percentage of people with a condition who died within a certain period.
- Sickle cell disease mortality burden is **highest in children.**

o However, the mortality rate of SCA for children **has dropped dramatically** over the last few decades.

Treatment:-

- **Blood Transfusions:** These can help relieve anemia and reduce the risk of pain crises.
- **Hydroxyurea:** This is a medication that can help reduce the frequency of painful episodes and prevent some of the long-term complications of the disease.
- It can also be treated by **bone marrow or stem cell transplantation.**
  - o **Bone marrow transplant:** a medical treatment that replaces the bone marrow with healthy cells.
  - o It can be used to treat certain types of cancer, such as leukemia, myeloma, and lymphoma, and other blood and immune system diseases that affect the bone marrow.

MUST READ: biotechnology
SOURCE: AIR

Dark matter

ENERGY DISTRIBUTION OF THE UNIVERSE

DARK ENERGY 69%
DARK MATTER 26%
5%
NORMAL MATTER
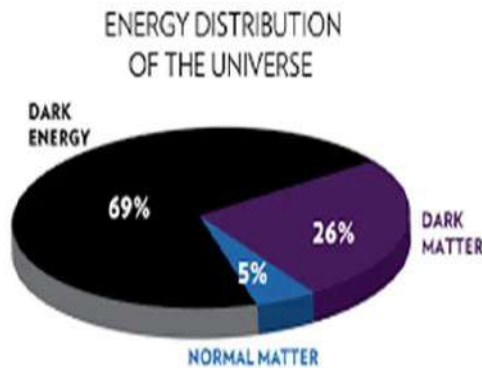
Context: Recent studies suggest new theories about **Dark matter.**
About Dark matter:-
• Dark matter is made up of **particles that do not have a charge.**
• These particles are "**dark",** because they **do not emit light.**
• They are called "**matter"** because they **possess mass like normal matter and interact through gravity.**
• Scientists estimate that up to **85% of the matter in the universe** could be made of dark matter.

- About 27% of the universe is dark matter and **68% is dark energy.**
- **Dark energy:** It is an unknown form of energy that affects the universe on the largest scales.
  - o While dark matter attracts and holds galaxies together, **dark energy repels and causes the expansion of the universe.**

Historical Background:-

- In the 19th century, **Lord Kelvin,** a Scottish-Irish physicist, wanted to estimate the mass of our galaxy, the Milky Way.
- However, Kelvin **found discrepancies or anomalies in the data**, things **which could not be explained**.
- These were attributed to **"dark bodies"** that we could not see.
- Swiss American astronomer Fritz Zwicky first inferred dark matter's existence in 1933.
- He discovered that the **mass of all the stars in the Coma cluster of galaxies** provided only about 1 per cent of the mass needed to keep the galaxies from escaping the cluster's gravitational pull.
- **1970s:** The reality of this missing mass remained in question for decades, until when **American astronomers Vera Rubin and W. Kent Ford confirmed its existence**.
- **They observed that** the mass of the stars visible within a typical galaxy is **only about 10 per cent** of that required to keep those stars orbiting the galaxy's center.

Significance of Dark Matter:-

- Dark matter **attracts and holds galaxies together**.
- It exerts its **influence on individual galaxies** as well as the universe at large.
- Dark matter's gravitational effects are also necessary **to explain the motions of clusters of galaxies** and the structure of the entire Universe at the largest scale.
    - **Galaxy:** any of the systems of stars and interstellar matter that make up the universe.
    - **Galaxy clusters**: are gravitationally bound groupings of galaxies, numbering from the hundreds to the tens of thousands.

New theories about dark matter:-

- **Doubting the existence of dark matter:** Some scientists argue that **if there were invisible forces in the universe, we would have found them already**.
- They suggest we should think outside of the **Standard Model.**
- Physicist Mordehai Milgrom has **developed an alternative theory of gravity**.
    - It suggests that gravitational force operates differently at **different distances from the core of a galaxy.**
- While **Newton's theory of gravity** explains most large-scale movements in the cosmos, Milgrom's Modified Newtonian Dynamics suggests that **a force acts differently when it is weak**, such as at the edge of a galaxy.
- Advocates of the theory say **it predicts the rotation of galaxies and the speed** of the stars **better than Newton's theory.**

MUST READ: Dark energy
SOURCE: THE INDIAN EXPRESS

Antimicrobial Resistance	**Context:** The **One Health Priority Research Agenda on Antimicrobial Resistance** was launched recently. **About One Health Priority Research Agenda on Antimicrobial Resistance:-** - **Launched: June 28, 2023.** - **Launched by:** the **United Nations (UN) Food and Agriculture Organization (FAO), the UN Environment Programme (UNEP), the World Health Organization (WHO) and the World Organisation for Animal Health (WOAH).** - The concept acknowledges the health of humans, domestic and wild animals, plants, and the larger environment, including ecosystems, are inextricably **linked and interdependent**. **Objectives of One Health Priority Research Agenda on Antimicrobial Resistance:-** - To prioritise **40 research topics for evidence generation** to inform policy and interventions by 2030. - To **guide a variety of stakeholders** in generating new evidence to address **antimicrobial resistance(AMR)**, with a **focus on low- and middle-income countries.**(AMR) - To serve as a guide for countries**, research institutes and funding bodies** to support One Health AMR research.
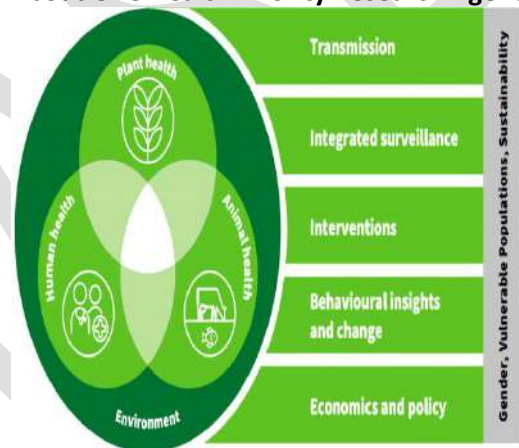
- To **allow policymakers, researchers, and the multidisciplinary scientific community** to collaborate across sectors.
- To sustainably **balance and optimize the health of people,** animals and ecosystems.

Five key pillars of One Health Priority Research Agenda on Antimicrobial Resistance:-
1. **Transmission**
- This pillar focuses on the **environment, plant, animal, and human sectors** where AMR transmission, circulation and spread occur.
2. **Integrated Surveillance**
- The surveillance aims for **harmonisation, effectiveness, and implementation** of integrated surveillance with a focus on Low and Middle-Income Countries (LMICs).
3. **Interventions**
- This pillar focuses on programmes, practises, tools, and activities aimed at preventing, containing, or reducing the incidence, prevalence, and spread of AMR.
4. **Behavioural Insights and Change**
- It focuses on research addressing human behaviour that affects AMR, including ways to combat it.
5. **Economics and policy**
- This pillar also takes into account the cost-effectiveness of an AMR investment case, financial sustainability, and long-term financial impact.

MUST READ: The Challenge of antimicrobial resistance
SOURCE: DOWN TO EARTH

Parker Solar Probe	**Context:** Recently, NASA's **Parker Solar Probe** completed its 16th close approach to the Sun.

Background:-
- NASA's Parker Solar Probe completed its 16th orbit around the Sun, which included a close approach to the Sun on June 22, 2023.
- During the close approach, Parker **came within 8.5 million kilometers of the Sun's surface** while moving at around 586,782 kilometers per hour.

About Parker Solar Probe:-
- **Launched:** 2018.
- **Launched from** Cape Canaveral in Florida.
- **Launch Vehicle:** Delta IV-Heavy with Upper Stage.
- **Mission by:** National Aeronautics and Space Administration (NASA).
- **Size:** The spacecraft is about the size of a small car.
- **Scientific Instruments:-**
  - Fields Experiment (FIELDS)
  - Integrated Science Investigation of the Sun (IS☉IS)
  - Wide Field Imager for Solar Probe (WISPR)
  - Solar Wind Electrons Alphas and Protons (SWEAP)
- It can travel directly **through the Sun's atmosphere.**
- **Aim**: to investigate how energy and heat move across the solar corona, as well as what accelerates the solar wind and solar energetic particles.
- It will journey through the sun's atmosphere eventually delivering humanity with the **closest-ever observations** of a star.
- It is said to be **humanity's first-ever mission that "visited" a star. (NASA's DART mission)**

- **Design:** -
  - The spacecraft and its instruments are protected from the heat of the Sun by a **4.5-inch thick carbon-composite shield.**
  - The shield **can withstand temperatures of around 1,777 degrees Celsius.**
  - It **carries four instrument** suites that are designed to study magnetic fields, plasma and energetic particles and image the solar wind.
- **Objectives:-**
  - To trace how energy and heat move through the corona.
  - To explore what **causes the acceleration of solar winds** and solar energetic particles.
- **Mechanism:** The spacecraft uses Venus's gravity to tighten its orbit around the Sun.
- **Future plan:** It is now preparing to get within around 7.2 million kilometers of the star's surface.

Significance of Parker Solar Probe:-
- **Exploring the Universe:** The Sun is the only star we can study closely. By studying this star we live with, we **learn more about stars throughout the universe.**
- **Exploring the Sun**: The Sun provides light and heat to all living things on Earth. The more we learn about it, the more we can grasp how life evolved on Earth.
- **Knowledge of the phenomenon affecting the Earth:** It is the source of the solar wind.
  - **Solar wind:** which is a flow of ionized gases from the Sun that travels past the Earth at more than 500 kilometres per second (a million miles per hour).

MUST READ: NASA-ISRO Synthetic Aperture Radar (NISAR) satellite
SOURCE: THE INDIAN EXPRESS

Carbon molecule in the Orion Nebula	**Context:** Recently, the **James Webb Space Telescope** detected a carbon molecule in the **Orion Nebula.**

Background:-
- The James Webb Space Telescope (JWST) has detected the **CH3+ molecule, which is also known as methyl cation**, in space for the first time.

Orion Nebula

- It lies in the **constellation Orion.**

- **Discovery:** it was discovered in **1610 by the French scholar Nicolas-Claude Fabri de Peiresc** and independently in **1618 by the Swiss astronomer Johann Cysat.**
- The Orion nebula lies about 1,350 light-years from Earth.
  - **Nebula:** any of the various tenuous clouds of gas and dust that occur in interstellar space.
  - They are often star-forming regions.
- It contains **hundreds of very hot (O-type) young stars clustered** about a nexus of **four massive stars known as the Trapezium.**
- Radiation from these stars makes the **nebula to glow**.

- It was the **first nebula to be photographed (1880), by Henry Draper** of the United States.

About James Webb Space Telescope:-

- It is an **infrared observatory orbiting the Sun. (International Space Station (ISS))**
- **Launched: 2021.**
- **Type: Orbiter.**
- **Launched by:** National Aeronautics and Space Administration (NASA).
- **Launch Vehicle:** Ariane 5 rocket, provided by the European Space Agency (ESA).
- **Launch site:** French Guiana.
- **Objective:** to find the first galaxies that formed in the early universe and to see stars forming planetary systems.
- It is NASA's **largest and most powerful** space science telescope.

Functions of the telescope:-

- It will study **every phase in the history of our universe**, ranging from the **first luminous glows after the big bang, to the formation of solar systems** capable of supporting life on planets like Earth, to the evolution of our own solar system.
- It will **build on the Hubble Space Telescope's** discoveries. **(ISRO's hybrid propulsion system)**
    - **NASA's Hubble Space Telescope:** it is the first astronomical observatory placed into orbit around Earth with the ability to record images in wavelengths of light spanning from ultraviolet to near infrared.
- It will look deeper into the cosmos and thus further back in time than is possible with Hubble.
- It will attempt to **detect the light from the very first population of stars** in the Universe to switch on more than 13.5 billion years ago.

MUST READ: IN-SPACe
SOURCE: THE INDIAN EXPRESS

Solar flare	**Context:** Recently, an X-class **solar flare** led to a radio blackout in parts of the US, Pacific Ocean.

Background:-

- According to media reports, **the Sun emitted an X-class solar flare** on July 2, 2023, disrupting radio communications over parts of the United States and the Pacific Ocean.
- The flare, **classified as an X1.0 flare**, peaked at 7:14 pm ET, confirmed US National Aeronautics and Space Administration (NASA).
- X-class denotes the **most intense flares**, while the number provides more information about its strength.

About Solar flares:-

- Solar flares are a **sudden explosion of energy** caused by tangling, crossing or reorganizing of magnetic field lines near sunspots.**(Solar Storms)**
    - **Sunspots**: areas that appear dark on the surface of the Sun.
    - They appear dark because they are **cooler than other parts of the Sun's surface.**
- The most powerful solar flares have the **energy equivalent of a billion hydrogen bombs**, enough energy to power the whole world for 20,000 years.
- **Time period:** Solar flares can **last from minutes to hours.**
    - Sometimes the same active region on the Sun can give rise to several flares in succession, erupting over the **course of days or even weeks.**

Classes of solar flares:-
- Solar flares can be **divided into various categories based on their brightness** in X-ray wavelengths.
- There are **five different classes of solar flares: A, B, C, M, and X**.
  - Each class is at least ten times more potent than the one before it.
- **A-class flares:** the smallest ones are near background levels.
- **C-class flares**: slight and have little effect on the Earth.
- **B-class flares:** smallest after the A-class flare.
- **M-class flares:** they are medium-sized and typically result in brief radio blackouts that affect the Earth's Polar Regions.
  - Sometimes an M-class flare is **followed by small radiation storms.**
- **X-class flares**: large, significant events that have the power to cause global radio blackouts and persistent radiation storms in the upper atmosphere.

Effects of solar flares on Earth:-
- They can affect **radio communications, power grids and navigation signals and endanger astronauts and spacecraft. (effects of solar activity)**
- They can **heat a substance** to several millions of degrees in a matter of minutes, **producing a burst of radiation** that spans the electromagnetic spectrum, **from radio waves to x-rays and gamma rays.**
- **Auroras**: When charged particles reach areas near Earth, they can trigger intense lights in the sky, called **auroras**.
- **Electricity shortages and power outages**: When particularly strong, a CME can also interfere in power utility grids, causing **electricity shortages and power outages.**

MUST READ: International Solar Alliance
SOURCE: THE INDIAN EXPRESS

Small Satellite Launch Vehicle (SSLV)	**Context:** Recently, **IN SPACe,** the commercial arm of the Indian Space Research Organisation, ISRO has called for an Expression of Interest from Indian private Industries to manufacture a **Small Satellite Launch Vehicle (SSLV).**

Background:-
- The Chairman of INSPACe, Dr. Pawan Goenka has outlined the objective of involving private players in the manufacturing of Small launchers by saying that this will pave the way for India to become a global hub for small satellite launches.

About Small Satellite Launch Vehicle (SSLV):-

- SSLV is an **indigenously developed mini rocket launcher**. (ISRO to undertake maiden flight of SSLV)
- It is the **smallest vehicle** at ISRO with a 110-ton mass.
- It is specially designed to carry smaller commercial satellites into the **low-earth orbit (LEO)** from 200-2,000 km above the Earth's surface.
  - **Low-earth orbit (LEO):** an orbit that is relatively close to Earth's surface.

o It is normally at an **altitude of less than 1000 km** but could be **as low as 160 km above Earth.**
- It is a **three-stage Launch Vehicle** configured with three Solid Propulsion Stages and a liquid propulsion-based Velocity Trimming Module (VTM) as a terminal stage.
- **Payload capacity:** up to 500 kg.
- It has the **capacity to deliver:-**
    o 600 kg to Low Earth Orbit (500 km) or
    o 300 kg to Sun-synchronous Orbit (500 km)

Advantages of SSLV:-
- It is a **low-cost launch vehicle.**
- It has **a Low turn-around time.**
- It is flexible in **accommodating multiple satellites.**
- It has **minimal launch infrastructure** requirements, etc.
- It is intended to cater to a **market for the launch of small satellites into low earth orbits** with a quick turn-around time.
- It will take **only 72 hours** to integrate, unlike the 70 days taken now for a launch vehicle.
- **Only six people** will be required to do the job, instead of 60 people.
- It will **shift the burden of commercial launches from PSLV.**
    o **PSLV:** is the third generation launch vehicle of India and the first Indian launch vehicle to be equipped with liquid stages.
- The SSLV is likely to **cost a fourth of the current PSLV. (PSLV-C54 launch)**

IN-SPACe :
- **Establishment: 2020.**
- **HQ: Ahmedabad, Gujrat.**
- **Objective:** promotion, encouragement and regulation of space activities of both government and private entities.
- It is an autonomous **agency** in **the Department of Space. (IN-SPACe)**
- It also **facilitates the usage of ISRO facilities** by **private entities.**
- **Composition:** It comprises **technical experts** for space activities along with **safety experts**, **academic experts and legal and strategic experts from other departments.**
    o It also comprises members from the Prime Minister's Office (PMO) and the Ministry of External Affairs (MEA) of the Government of India.

Functions of IN-SPACe:-
- To **develop a space start-up ecosystem** in India.
- To boost **the participation of students** in the Indian space sector and develop future space force frontiers.
- To create **international opportunities for Indian space companies**.
- To **make India the spaceport** and ground station hub for selected countries/regions.
- To **develop space tourism** and to **spread awareness** to the public about space technology and its benefits and role in the everyday life of individuals
- To **develop IN-SPACe talent** and knowledgebase.

MUST READ: Next Generation Launch Vehicle (NGLV)
SOURCE: AIR

Non-Fungible Tokens (NFTs)	**Context:** Home Minister Amit Shah will address two days G20 Conference on Crime and Security in the Age of **Non-Fungible Tokens (NFTs) and Artificial Intelligence (AI).** **Background:-**

- Two days G20 Conference on Crime and Security in the Age of NFTs, AI, and Metaverse will be organized in Gurugram, Haryana on the 13th and 14th of July. (India and G20 Presidency)
- The conference will bring together over 900 participants from G20 countries, 9 special invitee countries, international bodies, technology leaders, and domain experts from the country and across the world.

About Non-Fungible Tokens (NFTs):-
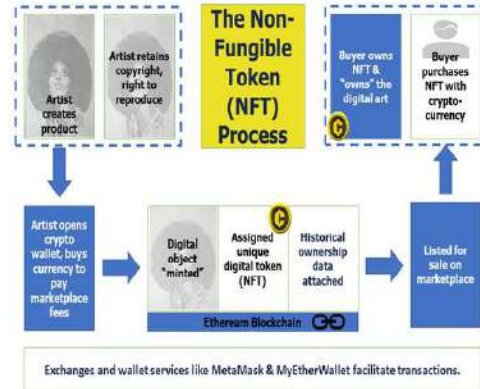
- NFTs are **assets in the digital world** that can be **bought and sold** like any other piece of property, but which **have no tangible form of their own.** (Non Fungible Tokens (NFTs))
- Anything that can be **converted into a digital form** can be a Non-Fungible Token (NFT).
- **It includes** drawings, photos, videos, GIFs, music, in-game items, selfies etc.
- Even **a tweet can be turned into an NFT,** which can then be traded online using cryptocurrency.
- NFT transactions are **recorded on block chains**.

Historical Background of NFTs:
- **2015: Terra Nulius** was the first NFT on Ethereum Blockchain.
- **2017:** Then came Curio Cards, CryptoPunks and CryptoCats.
- **2021:** NFTS slowly moved into public awareness, expanding into mainstream adoption in early 2021.

Characteristic Features of NFTs:-
- **Blockchain backed**: NFTs are different from other digital forms in that they are backed by Blockchain technology. (Blockchain Technology and Voting)
- **Exclusive ownership:** NFTs can have **only one owner at a time.**
- **Digital Storage:** NFT owners can also **digitally sign** their artwork and **store specific information** in their NFTs metadata.
- **Confidentiality:** This will be **only viewable to the individual who bought** the NFT.

Conditions to buy NFTs:-
- **Anyone who holds a cryptocurrency wallet** can buy an NFT. (Cryptocurrency)
  - That is the **only prerequisite** to purchasing an NFT.
- One **does not need any KYC documents** to purchase an art.

Risks associated with NFTs:-
- **Risk of Fraud:** In the recent past, several incidents of NFT Frauds have been reported.
  - This includes the **emergence of fake marketplaces, unverified sellers often impersonating real artists and selling copies of their artworks for half price.**
- **Environmental Risks:** In order to validate transactions, crypto mining is done, which requires **high-powered computers that run at a very high capacity**, affecting the environment ultimately.

Artificial Intelligence (AI)
- It describes the action of **machines accomplishing tasks that have historically required human intelligence. (A new global standard for AI ethics)**
- It includes technologies like **machine learning, pattern recognition, big data, neural networks, self-algorithms etc.**

- **India and AI**
  - According to a Canada-based company's report, Global AI Report 2019, **India stood at the ninth position** in terms of the number of AI specialists working in the field.
  - The **US, China and the UK topped the list.**

Benefits of AI:-
- **In Policing:** With the help of AI, one can predict the pattern of crime, and analyze a lot of CCTV footage, which is available across the country to identify suspects.
- **In Agriculture:** It can help sense one how much water the crop needs among many other works.
- **Solving complex issues** like efficient utilization of available resources.
- **Analyzing the Data:** AI technology helps in analyzing data

Disadvantages of AI:-
- **Security:** if somebody **compromises a smart system**, for instance, an autonomous car, the consequences can be disastrous, particularly given the ever-increasing **cyber security threat**.
- **Lethal Autonomous Weapons:** In the military, the autonomy in decision-making can be dangerous.
- **Technological unemployment:** By the introduction of new technologies, the jobs will be replaced by intelligent machines or systems.

MUST READ: Binance
SOURCE: AIR

Brucellosis	**Context:** Recently, a seven-year-old student from Kollam, Kerala tested positive for **Brucellosis.**

About Brucellosis:-

Brucella- mode of transmission

- It is a **bacterial infection that spreads from animals to people. (New Brucellosis Vaccine by ICAR)**
- Brucellosis is a **Zoonotic Disease**.
  - **Zoonotic Diseases:** It is a disease that passes into the human population from an animal source directly or through an intermediary species.
- It is also known as **Malta fever or Mediterranean fever.**
- **Caused by:** various **Brucella species**, which mainly infect cattle, swine, goats, sheep and dogs.

	○ **Brucella melitensis** is the most prevalent species causing human brucellosis. **Spread:** Brucellosis is **found globally** and is a **reportable disease** in most countries. **Vulnerability:** It **affects people of all ages and both sexes**. ○ However, **Person-to-person transmission is rare**. **Transmission:** ○ People are infected by **eating raw or unpasteurized dairy products.** ○ **Air transmission:** the bacteria that cause brucellosis can spread through the air or through **direct contact with infected animals.** **Symptoms:-** ○ Fever, weakness, malaise and weight loss. **Treatment:-** ○ The infection can usually be **treated with antibiotics.** ○ However, treatment takes **several weeks to months**, and the infection can recur. **Preventions:-** ○ **Avoiding unpasteurized dairy products.** ○ **Taking safety precautions** such as wearing rubber gloves, gowns or aprons, when handling animals or working in a laboratory. ○ Other preventive measures include **cooking meat properly, vaccinating domestic animals, etc.** **MUST READ: Monkeypox/mpox** **SOURCE: THE INDIAN EXPRESS**
Candida auris	**Context:** Recently, live cultures of **Candida auris** have been found in hospitalised stray dogs in Delhi. **About Candida auris:-** - It is a **multi-drug resistant fungus** that is capable of causing invasive infections in the human body. **First identified:** in Japan, in **2009** **Global Spread:** The fungus has been reported in more than 40 countries, including the United States, United Kingdom, South Africa, and Australia. - Candida auris has been tagged as an "urgent" and "critical" threat by WHO. **Transmission:-** - It can **spread indirectly from patient to patient** in healthcare settings such as hospitals or nursing homes. - It **remains on people's skin and objects** such as hospital furniture and equipment like glucometers, temperature probes, blood pressure cuffs, ultrasound machines and nursing carts etc. **for quite a long time.** **Vulnerability:-** - Candida Auris mainly **affects patients who already have many medical problems** or have had frequent hospital stays or live in nursing homes. - It is more likely to affect **patients who suffer from conditions such as blood cancer or diabetes, have received a lot of antibiotics or have devices like tubes going into their bodies.** **Symptoms:-** - Its symptoms include **fever and chills that do not go away after treatment with antibiotics.** **Treatment:-** - Antifungal drugs called **echinocandins are used to treat this infection.**

	• It is resistant to multiple classes of **antifungal drugs.(Shortage of anti-fungal injection, Amphotericin B)** • This makes treatment challenging and often requires the use of combination therapies. **MUST READ: Mucormycosis** **SOURCE: THE HINDU**

Perseverance rover	**Context:** National Aeronautics and Space Administration's (NASA) **Perseverance rover** has found organic matter on Mars recently.
	Background:-
	• NASA's Perseverance rover has discovered evidence of **organic compounds** in a Martian crater, offering clues on the potential habitability of the planet.
	   o **Organic compounds**: carbon-based molecules.
	• The results reveal that **Mars has a more complex organic geochemical cycle than previously thought**, implying the existence of multiple reservoirs of potential organic molecules on the planet.
	About Perseverance rover:-
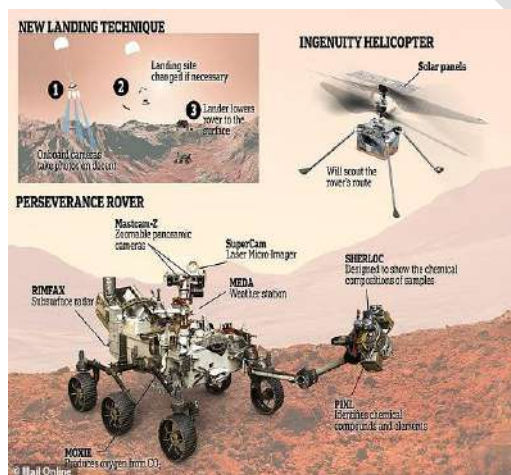	
	• **Mission Name: Mars 2020 (NASA's Perseverance and China's Tianwen-1 set to land on Mars)**
	• **Rover Name: Perseverance**
	• **Launch: July 30, 2020.**
	• **Landing: Feb. 18, 2021 .**
	• **Landing site: Jezero Crater, Mars. (NASA's InSight Mars Mission)**
	• **Power Source:** A Multi-Mission Radioisotope Thermoelectric Generator (MMRTG).
	   o **MMRTG:** it converts heat from the natural radioactive decay of plutonium (Plutonium Dioxide) into electricity.
	• **Objectives:-**
	   o Perseverance's primary objective is **looking for signs of ancient microbial life.**
	   o The rover is **studying and analyzing the Red Planet's regolith, rock and dust**, and is the first rover to collect and cache samples.
	   o **Regolith**: broken rock and soil.
	• Perseverance is the **most advanced, most expensive and most sophisticated** mobile laboratory sent to Mars.
	• It is capable of **drilling and collecting core samples** of the most promising rocks and soils and setting them aside in a "cache" on the surface of Mars.
	• It carries a unique instrument, **MOXIE or Mars Oxygen ISRU Experiment.**
	   o **MOXIE:** it will manufacture molecular oxygen on Mars using carbon dioxide from the carbon-dioxide-rich atmosphere.
	• It carries **Ingenuity,** the first-ever helicopter to fly on Mars.
	   o This is the **first time NASA will fly a helicopter on another planet or satellite.**
	
	MUST READ: 7th Anniversary of India's Mars Mission
	SOURCE: DOWN TO EARTH

| Avian Influenza | **Context:** Ongoing avian influenza outbreaks in animals are raising concerns about the potential risks to humans, according to a joint statement issued by the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO), and the World Organization for Animal Health (WOAH). |

About Avian Influenza:-
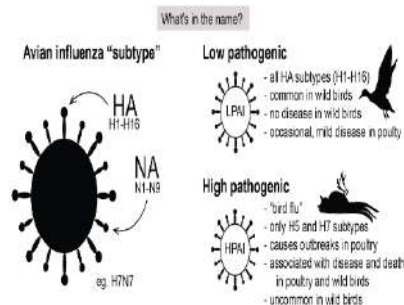
- Avian influenza or **bird flu** refers to the disease caused by infection with avian (bird) influenza (flu) **Influenza A viruses. (Bird flu)**
- **Influenza viruses**
  o There are four types of influenza viruses: **types A, B, C and D.**
  o **Influenza A viruses:** infect humans and many different animals.
  o **Influenza B viruses:** circulate among humans and cause seasonal epidemics.
  o **Influenza C viruses:** can infect both humans and pigs but infections are generally mild and are rarely reported.
  o **Influenza D viruses:** primarily affect cattle and are not known to infect or cause illness in people.
- **Influenza A** viruses are the **only influenza viruses known to cause flu pandemics**.
- These are **divided into subtypes** based on two proteins on the surface of the virus: **hemagglutinin (H) and neuraminidase (N).**
- These subtypes include: **A(H5N1), A(H7N9), and A(H9N2).**
- **H5N1** virus occurs **mainly in birds** and is highly contagious among them**.**
- **HPAI Asian H5N1** is especially deadly for poultry.
- Avian influenza is a **highly contagious viral disease**.
- It can **infect domestic poultry** and other bird and animal species.
- Avian influenza viruses **do not normally infect humans.**
  o However, sporadic human infections with bird flu viruses have occurred.
- **Risk:** The primary risk factor for humans is exposure to infected live or dead poultry or contaminated environments, such as live bird markets.

Prevention:-
- **Controlling the disease in the animal source** is critical to decreasing the risk to humans.
- Travelers to countries and people living in countries with known outbreaks should **avoid poultry farms, entering areas where poultry may be slaughtered**, and contaminated with faeces from poultry or other animals.
- **Quality surveillance** in both animal and human populations, thorough investigation of every human infection and risk-based pandemic planning is essential.

Treatment:-
- **Antiviral drugs**: **Neuraminidase inhibitors** like oseltamivir, and zanamivir, can reduce the duration of viral replication and improve prospects of survival.
- Treatment period: recommended for a **minimum of 5 days** but can be extended until there is satisfactory clinical improvement.

Vaccination:-
- **No vaccine** for the prevention of avian influenza infections in humans is commercially available. (Vaccine Development for COVID-19)

	MUST READ: AB-PMJAY and COVID treatment **SOURCE: AIR**
BepiColombo spacecraft	**Context:** Recently, during a close Mercury flyby, the **BepiColombo spacecraft** collected data that showed how electrons raining down on the planet's surface are triggering X-ray auroras. **Background:-** - According to the Europlanet Society, this is the first time the **process of X-ray auroras** on the planet has been explained. **Auroras:** a natural electrical phenomenon characterized by the appearance of streamers of reddish or greenish light in the sky, especially near the northern or southern magnetic pole. - The effect is caused by the **interaction of charged particles from the sun with atoms in the upper atmosphere.** **About BepiColombo spacecraft:-** **Launched in 2018 (UPSC CSE: Mercury's iron heart)** **Scheduled to begin orbiting Mercury: 2025.** **Launch Vehicle: Ariane 5** **Launch Site: Guiana Space Centre, Kourou, French Guiana.** - BepiColombo is an international joint mission by the **European Space Agency (ESA) and the Japan Aerospace Exploration Agency (JAXA)**. - ESA's Mercury Planetary Orbiter (MPO) **will study the planet's surface and interior.** - JAXA's Mercury Magnetospheric Orbiter (MIO) **will study the planet's magnetic field.** - These are the **first Mercury missions for the ESA and JAXA**. - Only two other spacecraft have visited Mercury: **NASA's Mariner 10 and MESSENGER.(International Space Station (ISS))** **Naming:** BepiColombo is named after **Professor Giuseppe (Bepi) Colombo (1920-1984)** from the University of Padua, Italy, a mathematician and engineer. - He was the **first to determine that an unsuspected resonance is responsible for Mercury's habit of rotating on its axis three times** for every two revolutions it makes around the Sun. - BepiColombo made its **first flyby of Mercury on Oct. 1, 2021**, and sent back several images. **Objectives of BepiColombo:-** - To study the planet's **composition, geophysics, atmosphere, magnetosphere, and history.** - Investigating Mercury's **surface and composition.** - Measuring **Mercury's exosphere** (a thin atmosphere) and understanding its composition and dynamics. - Conducting experiments to **test certain principles of general relativity.** - Improve our **understanding of gravity.** **MUST READ: Space Economy of India** **SOURCE: THE INDIAN EXPRESS**
Picolinic acid	**Context:** A recent study of **IISc** reveals that **picolinic acid** can block viruses causing SARS-CoV-2 and influenza A. **About picolinic acid:-** - It is a natural compound produced by **mammalian cells.** - It is a **pyridinemonocarboxylic acid.**

- o **Pyridinemonocarboxylic acid:** in which the carboxy group is located at position 2.
- It is an **intermediate** in the metabolism of tryptophan.
  - o **Tryptophan:** an essential amino acid used to make proteins.
- It has a role as a MALDI matrix material and a human metabolite.
  - o **MALDI matrix materials:** are crystalline compounds with a fairly low molecular weight.
- It is a conjugate acid of a picolinate.
  - o **Conjugate acids:** the acids that lose or gain protons.
- It is known to **help in the absorption of zinc and other trace elements** from our gut.
- It stays inside the body only **for a short duration** and is usually excreted out quickly.

Key Findings of the study:-
- The study describes the compound's remarkable **ability to disrupt the entry of enveloped viruses into the host's cell and prevent infection.**
- **Animal testing results:-**
  - o When the compound was tested in SARS-CoV-2 and influenza animal models, it was found to protect the animals from infection. (Antigen Detection Test)
  - o It was also found to reduce viral load in the lungs when given to infected animals. (Global Impact of COVID-19)
  - o In addition, the researchers found that picolinic acid **led to an increase in the number of immune cells in the animals.**
- **Inference**: It is effective against a variety of enveloped viruses, including **flaviviruses like the Zika virus and the Japanese encephalitis virus.**

MUST READ: COVID-19 & Herd Immunity
SOURCE:THE HINDU

Bacteriophages	**Context:** In recent times, due to rising antibiotic resistance scientists are considering **bacteriophages** as a cure for bacterial infections.

About bacteriophages:-

- **Discovered by:** they were discovered independently by **Frederick W. Twort** in Great Britain (1915) and **Félix d'Hérelle** in France (1917).
  - **Naming:** D'Hérelle coined the term bacteriophage, meaning **"bacteria eater,"**.
  - These viruses kill bacteria in our microbiomes.
  - They only attack bacteria and are harmless to people, animals, and plants.
  - Bacteriophages also known as **phages.**
  - **Habitat:** They are found in **soil, sewage, water, and other places bacteria live.**
  - **Classification:** Phages are classified in a number of virus families some examples **include Inoviridae, Microviridae, Rudiviridae, and Tectiviridae.**

Structure of a bacteriophage
- Capsid (head)
- Nucleic acid (DNA)
- Collar
- Sheath
- Baseplate
- Spikes
- Tail fiber

- **Physical Structure:-**
  - o Like all viruses, phages are simple organisms that consist of a core of genetic material (nucleic acid) surrounded by a protein capsid.
  - o **Capsid** of a bacteriophage can be icosahedral, filamentous, or head-tail in shape.

	o **Head-tail structure** seems to be unique to phages and their close relatives.
	 • **Genetic make-up:** Phage genomes can consist of **either DNA or RNA.**
	 • Two different cycles that bacteriophages may use to infect their bacterial hosts:-
	     o **The lytic cycle:** The phage infects a bacterium, hijacks the bacterium to make lots of phages, and then kills the cell by making it explode (lyse).
	     o **The lysogenic cycle:** The phage infects a bacterium and inserts its DNA into the bacterial chromosome, allowing the phage DNA (now called a prophage) to be copied and passed on along with the cell's own DNA.
	
	 Phage Therapy:-
	 • Phage therapy (PT) is also called **bacteriophage therapy.**
	 • It uses **viruses to treat bacterial infections.**
	
	 MUST READ: World Antimicrobial Awareness Week 2022
	 SOURCE: HINDUSTAN TIMES

DPT3 Vaccine	**Context:** Recent reports claimed that India recorded all-time high DPT3 immunisation coverage in 2022.
	 Background:-
	 • The coverage rate for DPT3 vaccines (diphtheria, pertussis, and tetanus) in India reached an all-time high of **93% in 2022**, surpassing the pre-pandemic record of 91% in 2019.
	 • This significant increase from the **85% coverage in 2021** was reported by the World Health Organization (WHO).
	
	 About DPT3 Vaccine:-
	 • DPT3 vaccines refer to a **combination vaccine** that provides protection against three infectious diseases: **diphtheria, pertussis (whooping cough), and tetanus. ('ZyCov-D' vaccine)**
	 • **Naming:** The "DPT" in DPT3 stands for the initials of these three diseases.
	 • **Diphtheria:** a bacterial infection that primarily affects the respiratory system.
	     o **Effects:** It can cause severe throat and nose congestion, difficulty breathing, and in severe cases, it can lead to heart and nerve damage.
	 • **Pertussis (Whooping Cough):** a highly contagious respiratory infection caused by the bacterium **Bordetella pertussis.**
	     o **Symptoms:** It is characterized by severe coughing fits, often accompanied by a "whooping" sound when gasping for breath.
	     o Pertussis can be particularly dangerous for infants and young children.
	 • **Tetanus:** a bacterial infection caused by the bacterium **Clostridium tetani.**
	     o It enters the body through wounds or cuts and produces a toxin that affects the nervous system, leading to muscle stiffness and spasms, particularly in the jaw and neck muscles. **(Nation's first mRNA-based vaccine)**
	 Dosage of DPT3 vaccines:-
	 • The primary dose of DPT is provided as part of the **pentavalent vaccine.**
	     o **Pentavalent vaccine:** a combination vaccine with five individual vaccines conjugated into one.
	 • **Two booster doses** are given at 16 -24 months and 5-6 years, respectively.
	 MUST READ: iNCOVACC
	 SOURCE: THE HINDU

Hydrogen Fuel	**Context:** G20 energy ministers call for cooperation on low-emission **hydrogen** fuel in the recently concluded Group of 20 energy ministers' meeting held in Goa.

Key Highlights of the meeting:-
- The G20 energy ministers met under **India's presidency**.
- **Theme: One Earth, One Family, One Future.**
- The meeting endorsed **zero- and low-emission hydrogen.**
- It also pledged support to the **acceleration of production, and utilization, as well as the development of transparent and resilient global markets for hydrogen** produced from zero and low-emission technologies and its **derivatives such as ammonia.**
- This is to be done by **developing voluntary and mutually agreed harmonizing standards** as well as **mutually recognized and interoperable certification schemes.**
- **Cooperation among G20 members** was said to be crucial to accelerate technology development and large-scale deployment of hydrogen and its derivatives such as ammonia while reducing costs.
- G20 committed to working towards **facilitating access to low-cost finance** for existing as well as new and emerging clean and sustainable energy technologies for supporting the energy transitions.

About Hydrogen Fuel:-
- Hydrogen is considered an **alternative to fossil** and other types of fuels.
- Hydrogen fuel is a zero-emission fuel burned with oxygen.
- Generation:-
- It can be created by **splitting water into hydrogen and oxygen.**
- Fuel cells are required to **transform Hydrogen into electricity** and use it.
  - **Fuel Cells:** use oxidizing agents through an oxidation-reduction reaction, to convert chemical energy into electrical energy.
- In the case of Hydrogen, fuel cells **combine Hydrogen and Oxygen** to generate electricity.
- A catalyst, usually made from **platinum** is generally used for this.

Uses of Hydrogen Fuel:-
- It can be used **in fuel cells or internal combustion engines. (Hydrogen Fuel Cell for Vehicles)**
- It is also used as a **fuel for spacecraft propulsion.**

Benefits of hydrogen as a fuel:-
- It is **readily available.**
- It is **environmentally friendly** and **non-toxic.**
- It **doesn't produce emissions** as other fossil fuels.
- It is **three times as powerful as gasoline and other fossil fuels**.
- It is **more efficient than diesel or gas.**
- It is **renewable** and can be produced again and again.

Limitations to Hydrogen production:-
- It does **not occur in deposits** or reserves like fossil fuel.
- It needs to be actually **produced using chemical reactions.**
- It is far **more expensive to produce.**
  - Hydrogen-fueled vehicles are also **more expensive than even battery-electric ones.**
- It is highly **flammable**.
- It is **difficult to store.**

	About Hydrogen:-
	• Hydrogen is the **chemical element** with the symbol H and **atomic number 1**.
	• It is the **lightest element** in the periodic table.
	• It is a non-toxic, nonmetallic, odourless, tasteless, colourless, and highly combustible diatomic gas at standard temperature and pressure.
	• It is the **most abundant chemical substance** in the universe.
	• Its nature is **not available freely.**
	• It exists **only in combination** with other elements.
	• Thus, it **has to be extracted from natural compounds, like water.**
	• Hydrogen is categorized into:-
	    o **Grey hydrogen**: produced from fossil fuels.
	    o **Blue hydrogen:** produced from fossil fuels with carbon capture and storage.
	    o **Green Hydrogen**: produced entirely from renewable power sources. (Green Hydrogen)
	MUST READ: National Green Hydrogen Mission
	SOURCE: DOWN TO EARTH

MERS-CoV	**Context:** Recently, Abu Dhabi reported a new case of Middle **East Respiratory Syndrome Coronavirus (MERS-CoV).**
	
	About Middle East Respiratory Syndrome Coronavirus (MERS-CoV)
	• It is a **viral respiratory disease.**
	• **Caused by:** Middle East respiratory syndrome coronavirus (MERS-CoV).
	    o It was **first identified** in **Saudi Arabia in 2012.**
	• **Fatality:** Approximately **35% of MERS** cases reported to WHO have died.
	    o MERS-CoV is a **zoonotic virus. (Monkeypox/mpox)**
	    o **Zoonotic virus:** it is transmitted between animals and people.
	• **Distribution:** MERS-CoV has been identified and linked to human infections in dromedary camels in several Member States in the **Middle East, Africa and South Asia.**
	Symptoms of MERS:-
	• Fever
	• Cough and
	• Shortness of breath.
	• Pneumonia is common.
	    o However, MERS patients **may not always develop this condition.**
	• **Gastrointestinal symptoms**: such as diarrhea.
	Transmission of MERS:-
	• **Human-to-human transmission is possible** and has occurred predominantly among close contacts and in healthcare settings.
	• **Outside the healthcare setting**, there has been limited human-to-human transmission.
	Prevention and Treatment:-
	• **No vaccine** or specific treatment is currently available.
	• **Treatment is supportive** and based on the patient's clinical condition.
	MUST READ: African Swine Fever
	SOURCE: THE HINDUSTAN TIMES

HISTORY AND ART & CULTURE

Hul Diwas	**Context:** Recently, Prime Minister Narendra Modi tweeted about **Hul Diwas**.

Background:-

- Every year, the state of Jharkhand celebrates **June 30 as 'Hul Diwas',** marking the beginning of the **Santhala rebellion.**
- **Objective:** remembering the sacrifice of Adivasis in their fight against British colonial authorities.

About Hul Diwas:-

The 4,800,000 SANTAL People of East India
Pray for revival among the Santal, to reach the unreached millions of Hindu and Muslim people among them.
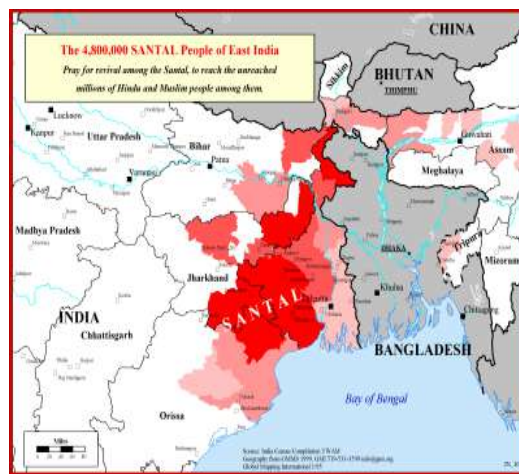
- 'Hul Diwas', marks the **beginning of the Santhal rebellion. (The Revolt of 1857)**
- **Launch: 30th June1855.**
- **Leaders: Sidhu, Kanhu, Bhairav, and also their two sisters Phulo and Jhano.**
- **Region of rebellion:** The rebellion took place in the **Damin-i-Koh region**.
  o **'Damin-i-Koh':** it means the 'skirts of the hills' in the present-day **Jharkhand** around **the Rajmahal Hills.**
- **Causes for Rebellion:** It was an organised war against colonialism against the oppression by **the British and their collaborators such as Zamindars, and the police.**

- Tribal councils and meetings discussed the possibility of rebellion, leading to a massive assembly of over **6,000 Santhals** on June 30, 1855, marking the beginning of the rebellion.
- Led by Sidhu and Kanhu, the Santhals rose against the British, **attacking symbols of colonial rule and executing moneylenders and zamindars.**
- The rebellion saw participation from **32 communities**, both tribals and non-tribals.
- **Phulo-Jhano,** two sisters, led an army of 1,000 women, playing crucial roles in providing food supply, gathering information, and attacking British camps.
- The East India Company's army was **defeated twice** during the rebellion.
- **Impact of rebellion:** The Hul rebellion symbolized resistance against British colonialism and laid the foundation for subsequent movements in Jharkhand.

Santhals/Santals

- **Migration: In the late 18th century** the Santal people migrated to Santhal Pargana (currently in districts of Dumka, Pakur, Godda, Sahibganj, Deoghar and parts of Jamtara) **from West Bengal** (Birbhum and Manbhum).
- **Reason for migration: 1770 famine in Bengal.**
- British settled them in the **Damin-i-Koh region** for the purpose of **collecting tax and generating revenue**.
- However, once settled, the Santals bore the brunt of **colonial oppression.**

	• They were further exploited by **money lenders and the police.**
	• **All this resulted in the Santhal rebellion.**
	• **Current status:-**
	o The Santal community is the **third largest tribal community in India**.
	o It is spread across **Jharkhand-Bihar, Odisha and West Bengal.**
	MUST READ: Integrating tribal knowledge systems
	SOURCE: THE INDIAN EXPRESS
Dalai Lama	**Context:** Prime Minister Narendra Modi has greeted, **Dalai Lama** on his 88th birthday recently.
	About Dalai Lama:-

• The Dalai Lama is the spiritual leader who belongs to the **Gelugpa tradition** of Tibetan Buddhism.
o **Gelugpa tradition**: it is the largest and most influential tradition in Tibet.
• The Dalai Lamas are believed to be **manifestations of Avalokiteshvara or Chenrezig**.
o **Avalokiteshvara:** the Bodhisattva of Compassion and the patron saint of Tibet.
• There have been only **14 Dalai Lamas** in the history of Tibetan Buddhism.
    o The first and second Dalai Lamas were given the title posthumously.
    o **Tenzin Gyatso:** the 14th and current Dalai Lama.
    o In 1989, he was awarded the **Nobel Peace Prize** for his non-violent struggle for the liberation of Tibet.

Historical Background:-
• Until China's annexation of Tibet in the 1950s, the **Dalai Lamas were the head of the Tibetan government.**
• Later, plans were made to bring Tibet officially under Chinese control.
• **1959:** Tibetans took to the streets demanding an end to Chinese rule.
• The **current Dalai Lama fled to India** during this **Tibetan uprising.**
• Former Indian Prime Minister **Jawaharlal Nehru granted him permission** to form the 'Tibetan government in exile' in Dharamsala (Himachal Pradesh). (India-China Trade)

The Process to Choose Dalai Lama:
• Following the Buddhist belief in the **principle of reincarnation**, the **current Dalai Lama is believed by Buddhists to be able to choose the body into which he is reincarnated.**
• That person, when found, **will then become the next Dalai Lama.**
• According to Buddhist scholars, it is the responsibility of the **High Lamas of the Gelugpa tradition and the Tibetan government** to seek out and find the next Dalai Lama following the death of the incumbent.
• **If more than one candidate is identified**, the true successor is found by officials and monks drawing lots in a public ceremony.
• Once identified, the successful candidate and his **family are taken to Lhasa (or Dharamsala)** where the child studies the Buddhist scriptures in order to prepare for spiritual leadership.

Tibetan Buddhism

- Tibetan Buddhism is the combination of the teachings of **Mahayana Buddhism with Tantric and Shamanic, and the teachings of Bon,** an ancient Tibetan religion.

Impact of Tibet and the Dalai Lama on India and China Relations:-

- **Background:** Tibet was India's actual neighbour for centuries.
  - o **1914:** Tibetan representatives, along with Chinese representatives, signed the **Shimla convention** with British India, delineating boundaries.
  - o However, following **China's full accession of Tibet in 1950**, the convention and the McMahon line that separated the two countries were rejected.
  - o **1954: India and China signed an agreement** in which they agreed to **recognize Tibet as the "Tibet region of China."**
- **Current Situation:** One of the major irritants in India-China relations is the Dalai Lama and Tibet.
  - o **China regards the Dalai Lama as a separatist** with considerable clout among Tibetans.
  - o In the face of rising tensions between India and China, **India's Tibet policy has shifted.**
  - o This policy shift indicates that the **Indian government is actively negotiating with the Dalai Lama** in public forums.
  - o The shift in India's Tibet policy is **increasing tensions between India and China.** **(India-China: Concerns)**

MUST READ: India-China Relations, a Year after Galwan
SOURCE: AIR

Bastille Day Parade	**Context:** Prime Minister Narendra Modi recently visited the **Bastille Day Parade.** **Background:-** - Prime Minister Narendra Modi's Bastille Day visit adds to the significance of the India-France relationship. - It is expected that this meeting will set the tone for the next 25 years. **About Bastille Day Parade:-** **Location: Paris, France.** **Began in 1880.** - It is an **annual event.** - It is held on the **morning of 14 July each year**. - It is a **French military parade**. - It is also known as the **14 July military parade.** - It is also one of the **oldest regular military parades** in the world. **Historical Background:-** - July 14 is one of the most important days in the history of France, it marks the **fall of the Bastille**, a military fortress and political prison, then **considered a symbol of the monarchy and armoury.** - This day is marked as the **National Day of France.** **Significance:-** **Honouring Unity and Freedom:** A national holiday in France, Bastille Day honours the independence and unification brought forth by the French Revolution. **Celebrating French Identity with Cultural Pride:** The French people experience a high sense of national pride during the Bastille Day festivities. **Promoting Global Solidarity:** Celebrations of Bastille Day take place all around the world and offer an opportunity for nations to unite and build global solidarity. (India-EU ties)

	Indo-French strategic partnership
	• **Defence Collaborations:-**
	    ○ **Purchase of Rafale aircraft:** India and France inked a ₹59000-crore deal for 36 Rafale jets in 2016.
	    ○ **Construction of Scorpene class submarines** by Mazagon Dock Shipbuilders Limited in collaboration with Naval Group, France. **(India and France relations)**
	• Adoption of the **Comprehensive Convention on International Terrorism (CCIT)** in the UN.
	• Following the **Pulwama attack in 2019,** France nationally listed the Pakistan-based Hafiz Saeed as a 'global terrorist'.
	• France has also supported India's requests to **block attempts by Pakistan to enlist innocent Indian citizens under the UNSC 1267 sanctions** Committee based on fabricated charges.
	    ○ **UNSC 1267:** a list of terrorists is a global list, with a United Nations Security Council's (UNSC) stamp.
	• **Bilateral military exercises:-**
	    ○ Navy: **Exercise Varuna**
	    ○ Army: **Exercise Shakti**
	    ○ Air Force: **Exercise Garuda**
	SOURCE: THE INDIAN EXPRESS

Veer Savarkar International Airport	**Context:** Prime Minister Narendra Modi inaugurated the integrated terminal building of **Veer Savarkar International Airport**, at Port Blair, Andaman &Nicobar. . **About Veer Savarkar International Airport** • It is located 2 km **south of Port Blair.** • It is the **main airport** of the **Andaman and Nicobar Islands of India.** • **In 2002,** Port Blair Airport at Andaman and Nicobar's Island was renamed after Veer Savarkar International Airport. • The Airport's architecture is **inspired by nature.** • It features a **shell-shaped architecture** that depicts the **sea and islands.** • The airport design was structured keeping in mind the ecological aspect of the island and some of the sustainability features. ○ These include like a **double insulated roofing system** to reduce heat gain and **skylights** to provide maximum inlet of abundant natural sunlight during day time to reduce artificial light usage inside the building. • It is a civil airport, and its facilities are shared with the Indian Navy. • **Administration:** The terminal is managed by the **Airports Authority of India**, while the traffic is handled by the **Indian Navy. (Reforms In Civil Aviation Industry)** **About Veer Savarkar** • He was **a freedom fighter** and politician. • **Born May 28, 1883.** • He was born in **Maharashtra's Nashik.** • **Death: February 26, 1966.** • Savarkar entered the Hindu Mahasabha and popularized Chandranath Basu's term **Hindutva** to establish a collective "Hindu" identity as an essence of Bharat (India). • He coined the Hindu nationalist **ideology of Hindutva.**

	• He founded the organizations **Abhinav Bharat Society and Free India Society.**
	  o **Abhinav Bharat Society (Young India Society):** it was an Indian Independence secret society founded by Vinayak Damodar Savarkar and his brother Ganesh Damodar Savarkar in **1904.**
	  o **The Free India Society:** it was formed by Vinayak Damodar Savarkar in London in 1906**.**
	• He organized a youth group named **'Mitra Mela' in 1899.**
	• He was the president of **Hindu Mahasabha from 1937 to 1943.**
	• He was the **first to acknowledge** the mutiny of 1857 as the **first struggle for Independence**.
	• He wrote the book **'The History of the War of Indian Independence'**.
	• He **championed atheism and rationality** and **disapproved of orthodox Hindu belief.**
	• He even **dismissed cow worship** as superstitious.
	• He created the **Aryan Weekly**, a handwritten weekly in which he published illuminating articles on patriotism, literature, history, and science.
	• He was sentenced to **50 years in the cellular jail of Andamans** for revolting against the **Morley-Minto reforms (Indian Councils Act 1909) in 1911.**
	• He was a critic of the Indian National Congress and its acceptance of **India's partition** and of Mahatma Gandhi.
	MUST READ: Kushinagar International Airport
	SOURCE: AIR

Rudragiri hillock	**Context:** Recently, a fascinating fusion of rock art was spotted at **Rudragiri hillock.**
	Key findings at Rudragiri Hillock:-
	• A combination of **prehistoric rock paintings from the Mesolithic period** and exquisite artwork from the **Kakatiya dynasty** were spotted. (Ancient rock paintings)
	  o **Mesolithic period**: This period is generally considered to have occurred between approximately 12,000-10,000 years ago
	  o During this time, human societies were predominantly **hunter-gatherer communities.**
	• The **first cave** presents a narrative **mural portraying the intense battle between the Vanara brothers, Vali and Sugriva.**
	• Both figures stand on the battlefield wielding maces, their faces displaying fierce determination.
	• **Rama,** positioned behind Sugriva, **shoots arrows at Vali.**
	• **A Ramayana fresco** depicting **Hanuman lifting the Sanjeevani hill** with his right hand painted a conch and fire altars can be seen to his right and another prehistoric painting to the left.
	• **In the middle cave**, a grand **sketch of Hanuman, accompanied by sacred symbols of the conch (Sankha) and the fire altar (Yagna Vedi),** are seen.
	• **The third cave** houses the prehistoric rock paintings from the **Mesolithic era.**
	• Interestingly, the Kakatiya artist chose the same rock shelter to superimpose the elegant figure of Hanuman, who is portrayed in a unique **'Anjali' posture**, folding his hands in a divine offering.
	• **Ganapati Deva Maharaja** (1199-1262 AD) who was the built the Muppavaram temple and a prominent figure of the Kakatiya dynasty is likely to be the **patron of the rich ancient mural heritage found at Rudragiri.**

	About Rudragiri hillock:- **Location: Guntur district of Andhra Pradesh.** - It is nestled amidst the Eastern Ghats and features five naturally formed rock shelters at its foothills, facing westward. - These shelters served as **living quarters for people** during the **Mesolithic age around 5000 B.C.** - They bear witness to the **luminous rock paintings of that era. (Weathering of oldest rock paintings due to climate change)** **Two natural caves** at the southern end of the hillock also exhibit exceptional murals from the renowned **Kakatiya kingdom.** **Kakatiya kingdom:** It was a south Indian dynasty that ruled most of the eastern Deccan region comprising present-day **Telangana and Andhra Pradesh**, and **parts of eastern Karnataka and southern Odisha.** **Time Period:** between **12th and 14th centuries.** **Capital**: Orugallu, now known as **Warangal.** **MUST READ: Ratnagiri's pre-historic rock art** **SOURCE: THE HINDU**
Copper Age	**Context:** Recent genomic data has shed light on the reasons for demise of the **Copper Age.** **Key highlights of the data:-** - Previous analyses of ancient genomic data have suggested that **two major genetic turnover events occurred in Western Eurasia.** **First event:** associated with the spread of farming around 7,000-6,000 BC and **Second event:** resulting from the expansion of pastoralist groups from the Eurasian steppe starting around 3,300 BC. - The period between these two events, **the Copper Age,** was characterized by a new economy based on metallurgy, wheel and wagon transportation, and horse domestication. - What happened between the **demise of Copper Age settlements** (around 4,250 BC) and the **expansion of pastoralists** is not well understood. - According to the recent data, it is found that while **there was genetic continuity between the Neolithic and Copper Age groups**, from around 4500 BC groups from the northwestern Black Sea region carried varying amounts of ancestry from Copper Age and steppe-zone populations. - This finding shows that **the groups had cultural contact and mixed nearly 1,000 years earlier** than previously thought. - The **transfer of technology between farmers and transitional hunters** from different geographical zones was integral to the rise, formation and **expansion of pastoralist groups** around 3300 BC. - According to the authors, **the early admixture during the neolithic appears to be local to the North West Black Sea region** of the fourth millennium BC and did not affect the hinterland in southeastern Europe. **About Copper Age:-** - It is also called the **Chalcolithic period.** - It describes a **transitional period** in human prehistory between the Neolithic period (New Stone Age) and the Bronze Age. (Bhimbetka cave) - The Chalcolithic cultures followed the **Bronze Age Harappa culture.** **Time Period in India:** It spanned around **2500 BC to 700 BC.**

	• **Location:** This culture was mainly seen in the Pre-Harappan phase, but in many places, it extended to the Post-Harappan phase too • It is characterized by the use of **both stone tools and the beginning of metalworking**, specifically the **utilization of copper.** • **Defining characteristics of this period**: the **simultaneous use of stone tools and early metal objects, primarily copper. (UPSC CSE: Ratnagiri's pre-historic rock art)** • The Chalcolithic culture corresponds to the farming communities, namely **Ahar or Banas, Malwa, and Jorwe.** • **Domestication and Agriculture:** The people of this age started doing **animal husbandry and agriculture.** • **Crops:** wheat, rice, millet, lentil, urad and moong etc. • **Salient Features:** The Chalcolithic culture of a region was defined by its **ceramics and other cultural equipment** like copper artefacts, beads of semi-precious stones, stone tools and terracotta figurines. **MUST READ: Stone Age Paintings in Gurugram** **SOURCE: THE HINDU**
Bal Gangadhar Tilak and Chandra Shekhar Azad	**Context:** Prime Minister Narendra Modi paid his tributes to **Bal Gangadhar Tilak** and **Chandra Shekhar Azad** on their birth anniversaries on July 23. **Background:-** • Saluting Indian nationalist and freedom fighter Bal Gangadhar Tilak, Prime Minister Modi said in a tweet, Lokmanya Tilak shook the foundation of British rule by demanding complete Independence. • While remembering revolutionary freedom fighter Chand Shekhar Azad fondly, the Prime Minister called him a gallant son of 'Bharat Mata' and a remarkable man. **About Bal Gangadhar Tilak:-** • **Birth: July 23, 1856.** • **Birthplace: Ratnagiri (now in Maharashtra state), India.** • **Death: August 1, 1920, in Mumbai.** • He was a scholar, mathematician, philosopher, and ardent nationalist who helped lay the foundation for India's independence by building his own defiance of British rule into a national movement. • He was also known as **Lokmanya Tilak.** • His famous declaration "**Swaraj is my birthright, and I shall have it**" served as an inspiration for future revolutionaries during India's struggle for freedom. • The British Government termed him the **"Father of Indian Unrest". (Sedition Law)** **Important Institutions Started by Tilak:-** • **Deccan Education Society (1884)**: He was the founder of the Deccan Education Society along with his associate **Gopal Ganesh Agarkar** and others. • **Fergusson College (1885):** He was one of the founders of the Fergusson College in Pune. **The ideology of Tilak:-** • He vocalized his strong **opposition to the moderate views** of the Indian National Congress (INC) on self-rule. • He maintained that **simple constitutional agitation in itself was futile** against the British. • He wanted an armed revolt against the British. • Following the partition of Bengal by Lord Curzon, Tilak wholeheartedly **supported the Swadeshi (Indigenous) movement and the Boycott of British goods.**

- Due to this fundamental difference in outlook, Tilak and his supporters came to be known as the **extremist wing of INC.**
- He was a great reformer and throughout his life, he advocated the cause of **women's education and women's empowerment.**
- Tilak proposed Grand celebrations on '**Ganesh Chaturthi' and 'Shivaji Jayanti'.**
  - He envisioned these celebrations inciting **a sense of unity** and inspiring nationalist sentiment among Indians.

Political ventures of Tilak:-
- **1890:** He joined the Indian National Congress (INC).
- Tilak **protested against the oppressive nature of the British** efforts and wrote provocative articles on it in his newspapers **on the epidemic of the Plague** in Pune and adjacent regions.
- His article inspired the **Chapekar brothers** and they carried out the assassination of Commissioner Rand and Lt. Ayerst on June 22, **1897.**
- Because of this, **Tilak was imprisoned for 18 months** on Sedition charges for inciting murder.
- **Indian Home Rule League (1914):** He founded the Indian Home Rule League.
- **Lucknow Pact (1916):** he concluded the Lucknow Pact with Mohammed Ali Jinnah, which provided for Hindu-Muslim unity in the nationalist struggle.

Newspapers by Tilak:-
- Weeklies: Kesari (Marathi) and Mahratta (English)

Books by Tilak:-
- Gita Rhasya
- Arctic Home of the Vedas.

About Chandra Shekhar Azad:-
- **Birth: 23rd July 1906.**
- **Birth Place: Alirajpur district of Madhya Pradesh. (Chandra Shekhar Azad)**
- **Death:** On February 27, 1931.
- He died at Azad Park in Allahabad on 27th February 1931.
- Chandrashekhar Azad was **a great Indian freedom fighter.**
- He was the **mentor of Bhagat Singh**.
- He is considered **one of the greatest revolutionaries** that India has produced.

Political ventures of Chandrashekhar Azad:-
- **1921:** when Gandhiji launched the Non-Cooperation Movement, Chandra Shekhar, then a 15-year-old student, joined.
  - He was arrested.
  - On being presented before a magistrate, **he gave his name as "Azad"** (The Free), his father's name as "Swatantrata" (Independence) and his residence as "Jail".
  - From that day, he came to be known as Chandra Shekhar Azad among the people.
- **1925:** Involved in the **Kakori train Robbery**.
- **1926:** he was involved in an attempt to **blow up the Viceroy of India's train.**
- **1928:** he was involved in the shooting of J**. P. Saunders at Lahore** to avenge the killing of **Lala Lajpat Rai.**

Organizations by Chandrashekhar Azad:-

- **Hindustan Republican Association**: After the suspension of the non-cooperation movement in 1922 by Gandhi, Azad joined Hindustan Republican Association (HRA).

MUST READ: Dayanand Saraswati

SOURCE: AIR

MISCELLANEOUS

National Investigation Agency (NIA)	**Context:** Recently, the **National Investigation Agency (NIA)** conducted raids at multiple locations in Bihar, Gujarat, and Uttar Pradesh.
	 Background:-
	 • The NIA conducted raids at multiple locations in Bihar, Gujarat, and Uttar Pradesh in connection with a radicalized module run by **Pakistan-based suspects - Ghazwa-e-Hind.**
	 • During the raids, it seized incriminating material, including digital devices and documents.
	
	 About National Investigation Agency (NIA):-
	 • NIA is functioning as the Central Counter Terrorism Law Enforcement Agency in India.
	 • **Establishment: 2008.**
	     ○ National Investigation Agency Act, enacted on 31-12-08, established it. (NIA)
	 • **Ministry: Ministry of Home Affairs.**
	 • **HQ: New Delhi.**
	 • It is a **central agency to investigate** and prosecute offences:-
	     ○ Affecting the sovereignty, security and integrity of India, security of the State, and friendly relations with foreign States.
	     ○ Against **atomic and nuclear facilities.**
	     ○ Smuggling in High-Quality **Counterfeit Indian Currency.**
	 Objectives:-
	 • It implements international treaties, agreements, conventions and resolutions of the United Nations, its agencies and other **international organisations.**
	
	 Historical Background:-
	 • The agency at the **Central level** was created for the investigation of offences related to terrorism and certain other Acts post-**2008 Mumbai terror attacks.**
	 Functions of NIA:-
	 • In-depth **professional investigation** of scheduled offences **using the latest scientific methods.**
	 • Ensuring **effective and speedy trials.**
	 • Developing into a thoroughly **professional, result-oriented organization.**
	 • Developing a **professional workforce** through regular training and exposure to the best practices and procedures.
	 • Maintaining professional and **cordial relations** with the governments of **States and Union Territories and other law enforcement** agencies in compliance with the legal provisions of the NIA Act.

	• **Assist all States** and other investigating agencies **in the investigation of terrorist cases.** • Build a **database on all terrorist-related information.** • Share the database available with the States and other agencies. • **Study and analyze laws relating to terrorism in other countries**. • Evaluate the **adequacy of existing laws** in India and propose changes as and when necessary. • To **win the confidence of the citizens of India** through selfless and fearless endeavors. **MUST READ: Central Bureau of Investigation (CBI)** **SOURCE: AIR**
National Thermal Power Corporation (NTPC)	**Context:** Recently, **National Thermal Power Corporation (NTPC)** has nearly doubled coal production during the first quarter of the financial year 2023 – 2024. **Background:-** • NTPC nearly doubled coal production in the first quarter (Q1) of the financial year 2023 – 202 as compared to the production during Q1 of the previous year. • It achieved impressive coal production of 8.48 million metric tonnes (MMT) during Q1 of FY24, compared to 4.27 MMT in Q1 of FY23. • In addition, coal dispatch has more than doubled during Q1 of 2023 - 2024, relative to the first quarter of 2022 - 2023. **About National Thermal Power Corporation (NTPC):-** • NTPC is India's **largest energy conglomerate** with roots planted back in 1975 to accelerate power development in India. (NTPC's Energy Compact Goals) • It is a **central Public Sector Undertaking (PSU).** • **Establishment: 1975.** • **HQ: New Delhi.** • **Ministry: Ministry of Power.** • **Objective:** To provide reliable power and related solutions in an economical, efficient and environment-friendly manner, driven by innovation and agility. • It became a **Maharatna company** in **2010.** • NTPC Limited is **India's largest integrated power utility**. • It contributes 1**/4th of the power requirement** of the country. • It has a diverse portfolio of **thermal, hydro, solar, and wind power plants**. • It is dedicated to delivering **reliable, affordable, and sustainable electricity to the nation.** • The company is committed to adopting best practices, fostering innovation, and embracing **clean energy technologies for a greener future.** **MUST READ: India's Power Crisis** **SOURCE: AIR**
National Anti-Doping Agency(NADA)	**Context:** Recently, the **National Anti-Doping Agency,** India today signed a Memorandum of Understanding with the South Asia Regional Anti-Doping Organisation (SARADO). **Background:-** • The Memorandum of Understanding was signed **in New Delhi.** • It aims to increase Regional Cooperation in anti-doping in Sports. **About National Anti-Doping Agency (NADA):-** • NADA is a **statutory body** under the **National anti-doping act, 2022. (National Fund to Control Drug Abuse)** • **Established: 2005.**

- **Ministry: Ministry of Youth Affairs & Sports.**
- **HQ: New Delhi.**

Historical Background:-
- NADA was set up as a registered society under the **Societies Registration Act** in 2005 with a mandate for **Dope-free sports in India.**
  - o **Doping** use of prohibited medications, drugs, or treatments by athletes with the intention of improving athletic performance.
- **2022:** The National Anti-doping Bill was passed to make NADA a statutory body.

Objectives of NADA:-
- To **implement anti-doping rules** as per the **World Anti-Doping Code (Code)**.
  - o **WADA:** it was established in 1999 and is headquartered in Montreal, Canada.
  - o **Objectives:** to develop, harmonize and coordinate anti-doping rules and policies across all sports and countries.
  - o **World Anti-Doping Code (Code):** it is the core document that harmonizes anti-doping policies, rules, and regulations within sports organizations and among public authorities around the world.
- To **promote education and research.**
- To create awareness about doping and its ill effects**.**

Functions of NADA:-
- To **implement the Anti-Doping Code** to achieve compliance by all sports organizations in the Country.
- To coordinate **dope testing program** through all participating stakeholders.
- To promote **anti-doping research and education** to inculcate the value of dope-free sports.
- To adopt best **practice standards** and quality systems to enable effective implementation and continual improvement of the program.

South Asia Regional Anti-Doping Organization (SARADO)
- **Formation: 2007.**
  - o It was formed on 16th May 2007 at the South Asian Anti-Doping Program Project Development Meeting held in Maldives.
- **HQ: Maldives.**
- **Objective:** to promote and coordinate the fight against doping in sports in all its forms among South Asia Regional Anti-Doping Organization (RADO) member countries.
- **Members:** It is comprised of Anti-Doping Organizations from **Bangladesh, Bhutan, Maldives, Nepal and Sri Lanka.**

MUST READ: Narcotic Drugs and Psychotropic Substances (NDPS) Act
SOURCE: AIR

Salvage and Explosive Ordnance Disposal Exercise (SALVEX)	**Context:** The Seventh edition of the Indian Navy – US Navy (IN – USN) **Salvage and Explosive Ordnance Disposal exercise, SALVEX** was conducted recently. **About SALVEX:-** • It was conducted from **26 Jun – 06 Jul 23 at Kochi.** • **Started :** 2005. • **Background:** Indian Navy(IN) and US Navy(USN) have been participating in joint Salvage and EOD exercises since **2005.** (26th Exercise Malabar) o **EOD:** it is a specialized technical area in military and law enforcement. • The exercise saw participation from both the navies which included the ships – **INS Nireekshak** and **USNS Salvor** in addition to Specialist Diving and EOD teams.

- **Duration:** it spans over 10 days. (Exercise TARKASH)

Key engagements and outcomes:-
- **Shared Learning on Maritime Salvage:** The Diving teams from both countries engaged in the exchange of experiences, lessons, and best practices in maritime salvage operations.
- **Training Synergies on EOD Operations:** The exercise provided an ideal platform for joint training exercises, allowing divers and EOD teams to enhance their interoperability and refine their skills.
- **Mastery of Mine Detection and Neutralization:** The participating divers received comprehensive training in the detection and neutralization of mines, enabling them to mitigate potential threats in underwater environments.
- **Efficient Wreck Location and Salvage Techniques:** The exercise focused on honing the teams' abilities to locate and salvage wrecks, a critical skill for ensuring safe navigation and effective disaster response.

MUST READ: India-US relations
SOURCE: PIB

Pradhan Mantri Rashtriya Bal Puraskar	**Context:** Recently, the last date of submission for the **Pradhan Mantri Rashtriya Bal Puraskar** was extended.

About Pradhan Mantri Rashtriya Bal Puraskar:-
- The Awards are announced on **December 26** on '**Veer Bal Diwas'.**
  - **Veer Baal Diwas:** marks a tribute to the martyrdom of Guru Gobind Singh's sons. (Parkash Purab of Sri Guru Gobind Singh Ji)
- The awards are conferred by the **President of India** at New Delhi at a special ceremony/function to be held in **January every year.**
- **Historical Background:** It was **instituted in 1979** as the National Child Welfare Awards, **renamed in 2018 as Bal Kalyan Puraskar**. (Pravasi Bharatiya Samman Award (PBSA))
- **Objective:** It is organized to celebrate the energy, determination, ability, zeal and enthusiasm of our children.
- **Field:** This national-level award is given in the fields of Bravery, Sports, Social Service, Science and Technology, Environment, Arts and Culture, and Innovation.
- **Awarded by: Ministry of Women and Child Development.**

Eligibility:-
- A child who is an **Indian Citizen** and **residing in India and is not exceeding 18 years** (as of the last date of receipt of application/nomination).
- The act/incident/achievement should have been **within 2 years** of the last date of receipt of application/nomination for the year of consideration.
- The **applicant should not be a previous recipient of the same award earlier in any category** (including National Child Awards for Exceptional Achievement, as were awarded by the Ministry earlier)

Selection Process
- The applications received are **first scrutinized by the Screening Committee.**
- **The final selection** is done by the **National Selection Committee.**

Decoration:-
- Medal
- Cash prize of Rs. 1,00,000
- Certificate and citation

The Pradhan Mantri Rashtriya Bal Puraskar is given under two categories:-
- **Bal Shakti Puraskar**
    - It is given by the Government of India every year **to recognize exceptional achievements of children in various fields** i.e., innovation, scholastic achievements, social service, arts & culture, sports and bravery.
    - **Eligibility:** A child who is an Indian Citizen residing in India and is between **5-18 years of age.**
    - **Decoration:** A medal, a cash prize of Rs. 1,00,000, book vouchers worth Rs.10,000, a certificate and a citation.
- **Bal Kalyan Puraskar**
    - It is given as **recognition to Individuals and Institutions**, who have made an **outstanding contribution towards service for children** in the field of child development, child protection and child welfare.
    - **Eligibility:** An individual who is an Indian Citizen residing in India and should have attained the age of 18 years or above (as of 31st August of the respective year).
    - S/he should have **worked for the cause** of children for **not less than 7 years.**
    - The institution should **not be entirely funded by the government** and should have been in the field of child welfare for 10 years and performing consistently in the field.

MUST READ: Padma awards
SOURCE: AIR

SAGAR SAMPARK

Context: Recently, the indigenous Differential Global Navigation Satellite System (DGNSS) '**SAGAR SAMPARK'** was inaugurated.

About SAGAR SAMPARK:-
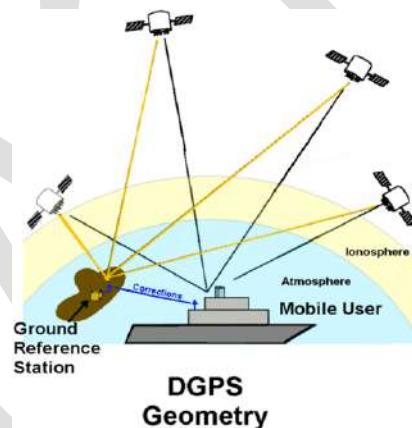
- **Ministry: Ministry of Ports, Shipping and Waterways.**
- SAGAR SAMPARK is India's **indigenous** Differential Global Navigation Satellite System (DGNSS).(NavIC)
    - **DGNSS:** is a terrestrial-based enhancement system which corrects the errors and inaccuracies in the Global Navigation Satellite System (GNSS) allowing for more accurate positioning information.
- Sagar Sampark is able to transmit corrections for **both GPS and Global Navigation Satellite System (GLONASS).**
    - **GPS:** satellite-based radio navigation system owned by the United States government and operated by the United States Space Force**.**
    - **GLONASS:** a Russian satellite navigation system operating as part of a radio navigation-satellite service.
- It **improves the accuracy of GPS positioning** by reducing errors caused by atmospheric inferences, satellite clock drift and other factors.
- The error correction accuracy has been improved from **five to 10 meters to less than 5 meters.**
- **Significance of Sagar Sampark:-**

	o It will help mariners in **safe navigation. (GAGAN (GPS Aided Geo Augmented Navigation))** o It will **reduce the risk of collisions, groundings, and accidents** in the port and harbour areas. o It will lead to the **safe & efficient movement of vessels.** o Sagar Sampark at six locations will assist the Director General of Lighthouses and Lightships (DGLL) to **provide radio aids to ships for marine navigation**. **MUST READ: Geotagging of payment system touchpoints** **SOURCE: PIB**

International Biology Olympiad	**Context:** Recently, a boy from Bengaluru won gold at **International Biology Olympiad (IBO).**
	Background:-
	• **Dhruv Advani,** won the gold at the 34th International Biology Olympiad, held at Al Ain, UAE, from July 3 to 11, 2023.
	• India topped the medals tally at the event by virtue of all four of its students winning the gold medal.
	• The event saw the participation of 293 students from 76 countries in this year's IBO.
	• This is the **first time that India has turned in an all-gold performance and topped the medals tally in IBO.**
	About International Biology Olympiad:-
	• The International Biology Olympiad (IBO) is the association that **organizes the world's premier biology competition for secondary school students. (Chess Olympiad)**
	• **Mission:** to identify, inspire, empower and support the next generation of leaders in the life sciences and to develop their international network.
	• The International Biology Olympiad competition is organized for **pre-university students under the age of 20.**
	• **First IBO: Czechoslovakia in 1990.**
	    o It has since been **held annually.**
	    o Every year it is **organized by different countries.**
	    o **34th IBO:** Al Ain, United Arab Emirates in 2023.
	• India organized this Olympiad in **2008.**
	MUST READ: Target Olympic Podium Scheme
	SOURCE: THE HINDU

Bhoomi Samman awards- 2023	**Context:** As per recent announcements, President Droupadi Murmu will present **Bhoomi Samman awards** in New Delhi. **Background:-** • Rural Development and Panchayati Raj Minister stated this event is extremely significant **for Revenue and Registration functionaries of the State**, who would receive the "Bhoomi Samman" for the first time in the last 75 years for their outstanding performance. • He further said that the "Bhoomi Samman" Scheme is a fine example of Centre-State cooperative federalism based on trust and partnership. **About Bhoomi Samman 2023:-** • **Launched: 2023.** • **Presented by: President of India.** • **Presented at: Vigyan Bhawan, New Delhi.** • **Ministry: Ministry of Rural Development.** • **Selection Process:-**

	o The grading has been done on the basis of the **performance of Districts** as reflected in the **Management Information System (MIS) of the Digital India Land Records Modernization Programme (DILRMP)** and as reported by the State/UT Governments. (SVAMITVA Scheme) o **Platinum Grading** is given to the **Districts which have completed saturation i.e. 100% targets** in the respective core components of DILRMP. (Unique Land Parcel Identification Number (ULPIN) scheme) • Nine State Secretaries and 68 District Collectors of the various Districts will be presented with "Bhoomi Samman" recognizing their efforts in achieving outstanding performances. **MUST READ: Revised Rural Area Development Plan Formulation and Implementation (RADPFI) Guidelines** **SOURCE: AIR**
Hwasong-18	**Context:** Recently, North Korea tested its latest intercontinental ballistic missile (ICBM) named **Hwasong-18**. **About Hwasong-18:-** • **Developed by:** Democratic People's Republic of Korea (DPRK) or North Korea. • **Tested in** 2023. • It is a type of **solid-fuel intercontinental ballistic missile (ICBM)** o **ICBM:** a long-range (greater than 5,500 km or 3,500 miles) ballistic missile typically designed for nuclear weapons delivery, that is, delivering one or more nuclear warheads. • It is North Korea's first ICBM to use **solid fuel.** o Solid propellants can fire **faster and accelerate more quickly** at liftoff. o It allows for **faster launches.** • It is part of **North Korea's missile program** and is believed to have a range capable of reaching targets beyond the Korean Peninsula. **Significance of the launch:-** • The development and potential deployment of the Hwasong-18 missile by North Korea raises concerns among the international community due to its **long-range capability** and the potential threat it poses to regional and global security. • North Korea's state media claimed that the latest test fire was conducted according to the "strategic judgement of the Central Military Commission of the Workers' Party of Korea, at a grave period when the **military security situation on the Korean peninsula**. (Tension in Korean Peninsula) • It also showed suspicion about the **Washington Declaration**, an agreement that was signed recently between **US President Biden and South Korea's President Yoon Suk-yeol** during a bilateral meeting to mark 70 years of the US-South Korea alliance to be a cause of future **nuclear engagement** against it. North Korea. • The country's media thus claims that the test was conducted as part of the efforts to bolster the legitimate right to **self-defense to reliably defend the security of the state and regional peace.** **MUST READ: North and South Korea found guilty of violating armistice agreements** **SOURCE: INDIAN EXPRESS**

Universal Postal Union	**Context:** As per recent announcements, **Universal Postal Union** will evaluate the UPI platform for cross-border remittances using the global postal network.
	 Background:-
	 • The Director General of Universal Postal Union (DG UPU) **Masahiko Metoki,** was on a three-day visit to India for the inauguration of UPU Regional Office.
	 • He appreciated India's expansion of physical post offices riding on the waves of digital infrastructure and agreed to evaluate the UPI platform for integrating it with **cross-border money remittance** through postal channels.
	
	 About Universal Postal Union:-
	 • **Establishment: 1874** under the **Treaty of Bern of 1874.**
	 • **HQ: Berne, Switzerland.**
	 • **Objective:** to coordinate postal policies among member nations, in addition to the worldwide postal system.(World Postal Day: 9th of October)
	 • **Members: It has 192 member countries.**
	 • **Eligibility of membership:** Any **member country of the United Nations** may become a member of the UPU.
	    ○ Any **non-member country** of the United Nations may become a UPU member provided that its request is **approved by at least two-thirds of the member** countries of the UPU.
	    ○ **India joined** the UPU in **1876.**
	 Structure of UPU:-
	 It consists of four bodies:-
	 The Congress
	 • Congress is the supreme authority of the Universal Postal Union (UPU) and meets every four years.
	 The Council of Administration
	 • The Council ensures the continuity of the UPU's work between Congresses supervises its activities and studies regulatory, administrative, legislative and legal issues.
	 The Postal Operations Council
	 • The Postal Operations Council (POC) is the technical and operational mind of the UPU and consists of 48 member countries, elected during Congress.
	 The International Bureau
	 • Fulfilling a secretariat function, the International Bureau provides logistical and technical support to the UPU's bodies.
	
	 Functions of UPU:-
	 • It is a **United Nations specialized agency** and the postal sector's primary forum for international cooperation.
	 • It is the **second oldest international organization worldwide.**
	 • It is the **primary forum for cooperation between postal sector players.**
	 • It helps to **ensure a truly universal network** of up-to-date products and services.
	 • It plays an **advisory, mediating and liaison role**.
	 • It provides **technical assistance** where needed.
	 • It sets the **rules for international mail exchanges.**
	 • It makes recommendations to stimulate growth in mail, parcel and financial services volumes and **improve the quality of service for customers.**

	MUST READ: India to take over the leadership of the Asian Pacific Postal Union (APPU) **SOURCE: THE ECONOMIC TIMES**
National Geoscience Awards-2022	**Context:** The President of India, presented **National Geoscience Awards-2022** in New Delhi recently. **Key Highlights of the Award Ceremony:-** • **Twenty-two geoscientists**, including **two women**, were awarded. • **The National Geoscience Award for Lifetime Achievement** was conferred upon **Dr Om Narain Bhargava,** well known for his pioneering work in the Himalayas spanning over the last four decades. • **The National Young Geoscientist Award was presented to Dr Amiya Kumar Samal,** who is Assistant Professor at Banaras Hindu University. o He has made a significant contribution to understanding the variation of the sub-continental lithospheric mantle below different Archean cratons of the Indian shield. **About National Geoscience Awards-2022:-** • **Instituted in 1966** • **The awards are given annually.** • **Ministry: Ministry of Mines. National Geoscience Awards -2022)** • **Objective:** to honour individuals and teams for achievements and contributions in various fields of geosciences. **Broad Disciplines of the National Geoscience Awards:-** • Mineral Discovery & Exploration • Mining, Mineral Beneficiation & Sustainable Mineral Development • Basic Geosciences • Applied Geosciences **Award's Decoration:-** • Each award would be in the form of a **Certificate and a Cash Prize.** • The Cash Prize would be as under: o National Geoscience Award for Lifetime Achievement: **Rs.5, 00,000.** o National Geoscience Award: **Rs.3, 00,000.** o [In case of a team award, the award money will be equally divided.] o National Young Geoscientist Award: **Rs.1,00,000/** plus **a research grant** of **Rs. 5,00,000** spread over five years subject to satisfactory yearly progress • The Award money is **exempt from Income Tax under Section (10) (17A)** of the Income Tax Act, 1961. **MUST READ: Pravasi Bharatiya Samman Award (PBSA)** **SOURCE: AIR**
International Civil Aviation Organization (ICAO)	**Context:** Recently, The Directorate General of Civil Aviation has adopted guidelines for environmental protection developed by the **International Civil Aviation Organization (ICAO).** **Background:-** • These guidelines are to promote sustainable aviation practices and reduce greenhouse gas emissions from the aviation sector. • Minister of State for the Ministry of Civil Aviation Gen. (Dr) V. K. Singh informed this in a written reply in the Rajya Sabha recently. **About International Civil Aviation Organization (ICAO):-**

- **Establishment: 1944.**
- **HQ: Quebec, Canada.**
- The International Civil Aviation Organization (ICAO) is a specialized funding **agency of the United Nations.**
- **Objective:** to help countries share their skies to their mutual benefit.
- **Membership: It has 193 Member States.**
  - **India is one of ICAO's founder members**, having attended the Chicago Convention.

Functions of ICAO:-
- It **changes the principles and techniques** of international air navigation.
- It fosters the **planning and development of international air transport** to ensure safe and orderly growth.
- It **adopts standards and recommended practices** concerning air navigation, its infrastructure, flight inspection, prevention of unlawful interference, and facilitation of border-crossing procedures for international civil aviation.
- It defines the **protocols for air accident investigation** that are followed by transport safety authorities in countries signatory to the Chicago Convention on International Civil Aviation. (DGCA)

MUST READ: Reforms In Civil Aviation Industry
SOURCE: AIR

Vibrant Villages Programme (VVP)	**Context:** Recently, the Government has approved **Vibrant Villages Programme (VVP).** **About Vibrant Villages Programme (VVP):-** • **Launched:2023.** o It was announced in the Union Budget 2022-23 (to 2025-26). • **Ministry: Ministry of Home Affairs.** • **Objective:** to create sufficient incentives for people to stay in the selected villages. • **Coverage:** It will cover the border areas of Himachal Pradesh, Uttarakhand, Arunachal Pradesh, Sikkim and Ladakh. • It is a **Centrally Sponsored Scheme**.(The India-China border flare-up) **Salient Features of Vibrant Villages**
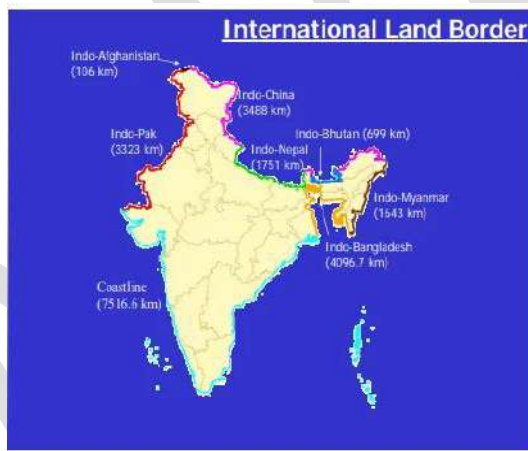
Programme:-
- The programme envisages focused areas of interventions in the select villages for the **creation of opportunities for livelihood generation.**
- This would be done through the **promotion of tourism & cultural heritage, skill development & entrepreneurship.**
- It works for the **development of cooperative societies** including agriculture/horticulture, cultivation of medicinal plants/herbs etc.
- It also includes **providing road connectivity to unconnected villages, housing & village infrastructures, energy including renewable energy, television & telecom connectivity.**
- It focuses on the **comprehensive development of villages** of blocks on the northern border.
- It will provide funds for the **development of essential infrastructure.**

- It will lead to the **creation of livelihood opportunities** in 19 Districts and 46 Border blocks 4 states and 1 UT along the northern land border of the country.
- It will help in achieving **inclusive growth** and **retaining the population** in the border areas.

Significance of Vibrant Villages Programme:-

- **Strengthening the Security:** It is aimed at **strengthening the security grid** on the Line of Actual Control (LAC).
- **Infrastructure development: Infrastructure will be improved** in states like Uttarakhand, Himachal Pradesh, and Arunachal Pradesh. (Significance of border infrastructure)
    - Under the programme, **residential and tourist centers will be constructed.**
- **Connectivity and Energy resources:** It will also provide for improvement in **road connectivity** and the development of **decentralized renewable energy** sources.
- **Educational outreach:** Apart from that, direct access to Doordarshan and education-related channels will be provided.
- **Livelihood Support:** help and support will be provided for the livelihood of the people.

MUST READ: Challenges to Secure India's Land Borders
SOURCE: PIB

Transgender Persons Can Avail Existing Quota

Syllabus

- **Mains – GS 1 (Society) and GS 2 (Governance)**

Context: The Union government has told the Supreme Court that transgender persons can avail of any of the existing 50% reservation in admissions and government jobs already available to Scheduled Caste, Scheduled Tribe and Socially and Educationally Backward Communities (SEBC) across the country.

About reservation for Transgender:

- Transgender persons are **those whose gender identity or expression does not match their assigned sex at birth.**
  - o They face discrimination, stigma, violence and exclusion from various spheres of life.
- To address these issues and ensure their rights and dignity, some countries have introduced reservation policies for transgender persons in education, employment, health care and political representation.
- In India, reservation is granted to certain castes, tribes, and religious minorities that are classified as **socially and educationally backward classes (SEBCs).**
  - o One such group that has been recognized as SEBCs by the **Supreme Court of India is the transgender community.**

Demand for horizontal reservation for transgender community:

- Transgender individuals have faced long-term marginalization in society, warranting specific provisions and recognition of their social identity.
- The NALSA judgment has been interpreted as directing reservations for transgender individuals in the OBC category due to their identification as a socially and educationally backward class.
- The demand for horizontal reservation raises concerns that **Dalit, Bahujan, and Adivasi transgender individuals** may have to choose between availing reservation based on **caste and gender identities, leading to competition and exclusion**.

NALSA judgement:

- A study conducted by the **National Human Rights Commission** revealed that in 2017, **only 6% of transgender people** were formally employed.
- In the **National Legal Services Authority of India (NALSA) vs Union of India (2014) case**, the Supreme Court ruled that **transgender persons have a right to reservation**.
- It also directed the Centre and the State Governments to take steps to treat them as socially and educationally backward classes of citizens and extend all kinds of reservation in education and employment.

Horizontal and Vertical Reservations in India

- **Reservation in education and employment** can be divided into two broad categories, namely, vertical and horizontal.
- **Vertical reservations** are provisions aimed at addressing social asymmetry arising out of caste hierarchy, and in the case of OBCs, social and educational "backwardness".
  - o These include **reservations for Scheduled Castes (SC), Scheduled Tribes (ST) and Other Backward Classes (OBC).**
- **Horizontal reservation**, on the other hand, cuts across all vertical groups to provide **affirmative policies for disadvantaged groups within categories**.

- o For example, disabled persons are guaranteed horizontal reservation in all the aforementioned vertical categories, general and reserved (vertical) alike, by the Central government.

Challenges faced by Transgender Community

- **Social Stigma:** They often face difficulty in property inheritance or child adoption.
  - o Because of being socially ostracized, they are compelled to take up menial jobs despite good qualifications or forced into sex work.
- **Identity crisis:** They are often forced to identify with a gender with which they are not associated at the workplace despite the government passing the **Transgender Persons (Protection of Rights) Act, 2019** that allows the community the right to self-perceived gender identity.
- **Discrimination and ostracisation:** They face discrimination in employment, educational institutes, and within families which severely affects their overall wellbeing.
- **Unemployment:** The community has limited avenues of employment and faces severe discrimination at work because of the associated social stigma.
- **Lack of public amenities:** They face issues with the accessibility of public toilets and public spaces.
  - o They often face problems in prisons, hospitals and schools.

Transgender initiatives in India

- **Transgender (Protection of Rights) Act 2019:** The Act, passed by Parliament, aims to end discrimination against Transgender people in access to education, employment and healthcare and to recognize the right to their self-perceived gender identity.
- **Transgender Persons (Protection of Rights) Rules, 2020:** To carry out the provisions of the Transgender Persons (Protection of Rights) Act, 2019 of the Government.
- **National Transgender Council:** The Transgender (Protection of Rights) Act, 2019 established the National Transgender Council to advise the Central Government on the formulation and evaluation of policies, programmes, legislation and projects for the welfare of the Transgender community.
- **National Transgender Portal:** It is a portal of the **Ministry of Social Justice and Empowerment** that helps transgender people to apply for certificates and identity cards digitally from anywhere in the country.
- **Garima Greh:** The aim of the scheme is to provide refuge to Transgender people with basic amenities like shelter, food, medical care and recreational facilities.

Way Forward:

By implementing these measures, we can create a more inclusive and equitable society for transgender persons and other marginalized groups. The establishment of **National Council for Transgender Persons** has been a welcome step to mainstream the community in the society and increase sense of respect for transgender community. Reservation policies are not a panacea, but they are a necessary and effective tool to address the historical injustices and systemic barriers that transgender persons face.

Source: **The Hindu**

Human Trafficking in India

Syllabus

- **Mains – GS 1 (Society) and GS 2 (Governance)**

Context: The Ministry of Women and Child Development has approved a scheme to provide financial assistance to states and Union Territories to set up protection and rehabilitation homes for victims of trafficking in states having international borders.

About human trafficking:

- It is trading humans mostly for the **purpose of bonded labour, forced labour, sexual slavery, commercial sexual exploitation or extraction of organs**.

- Trafficking of humans is considered one of the fastest growing crimes of Trans national criminal organizations.
- It is a crime, which involves violation of human rights by means of exploitation and coercion.
- It is a heinous crime which is occurring not only within a country but also Trans nationally.

Trafficking in India:

Five states with most children trafficked

■ Male ■ Female

West Bengal: 426 (Male), 2,687 (Female)
Rajasthan: 1,823 (Male), 696 (Female)
Uttar Pradesh: 748 (Male), 84 (Female)
Gujarat: 137 (Male), 348 (Female)
Karnataka: 137 (Male), 219 (Female)
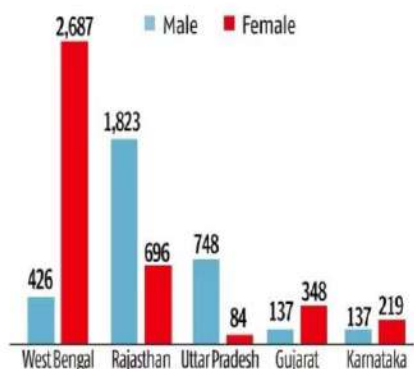
- In 2022, 6,622 trafficking victims were reported to have been identified; in addition, 694 were identified as potential victims.
- In 2021, Police filed charge sheets in 84.7 percent of the 2,189 cases registered under the Anti-Human Trafficking Units (AHTUs) across the country in 2021.

Issues and challenges of Human Trafficking in India

- **Commercial demand for Sex**: The nature of sex trafficking is seen as an economic supply by the traffickers. Males request female prostitutes under this demand model, which creates a market for sex workers and ultimately encourages sex trafficking, illegal trade, and the coercion of people into the sex industry.
- **Poverty and unemployment:** Women may migrate voluntarily due to a lack of economic, educational, and social opportunities before becoming involuntarily trafficked for sex work.
- **Globalization**: As globalization has opened the national borders for smooth exchange of goods and services, its economic impact has also pushed peoples especially women and children to migrate and be vulnerable to trafficking.
- **Gender based discrimination:** Sons are traditionally regarded as more valuable, superior, and useful in a family than daughters in our patriarchal society are.
  - As a result, girls in this society have little to no access to education, which causes a gender gap in both literacy rates and potential income for boys and girls.

Legal Instrument to combat human trafficking:
- The main international legal instrument is the **UN Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children**, which was adopted by the United Nations General Assembly in 2000.
- The Trafficking Protocol, which supplements the **United Nations Convention against Transnational Organized Crime**, is the only international legal instrument addressing human trafficking as a crime.

Related Constitutional and Legislative Provisions in India:
- **Article 23(1):** It prohibits the trafficking of persons.
- **Immoral Traffic (Prevention) Act, 1956 (ITPA):** It aims to stop immoral trafficking and prostitution in India and is divided into 25 sections and 1 schedule.
- **Sections 366(A) of Indian Penal Code:** It prohibits kidnapping and Section 372 of IPC prohibits selling minors into prostitution.
- **Bonded Labour System (Abolition) Act 1976, Child Labour (Prohibition and Abolition) Act 1986 and Juvenile Justice Act:** All of these prohibit bonded and forced labour.
- **Protection of Children from Sexual offences (POCSO) Act, 2012:** It is a special law to protect children from sexual abuse and exploitation.

Other Specific Legislations:
- **Prohibition of Child Marriage Act, 2006**

- Bonded Labour System (Abolition) Act, 1976
- **Child Labour (Prohibition and Regulation) Act, 1986**
- Transplantation of Human Organs Act, 1994
- Specific Sections in the IPC, like Sections 372 and 373 dealing with selling and buying of girls for the purpose of prostitution.
- Steps by State Governments: States have also enacted specific legislations to deal with the issue, like the Punjab Prevention of Human Smuggling Act, 2012.

Way forward:
Human Trafficking is an organized crime and operated across domestic and international borders, the nature of the crime needs strong cooperation and intelligence sharing between different investigating agencies.
There is need to ensure a **minimum standard of living for all people, strict border control through proper fencing and regular patrolling, prevent corruption in bureaucracy**, etc., to curb the menace of trafficking.
Steps should be taken to set up Protection Homes across the country, to **provide shelter, food, counselling, and medical services to victims**. Our development goals must include both economic development and social inclusion.
Source: **Indian Express**

Marine heat waves

Syllabus
- **Mains – GS 1 (Geography)**

Context: In April 2023, the average daily global sea surface temperature reached 21.1 degrees Celsius, breaking the previous record of 21 degrees Celsius in 2016.
- Since then, ocean temperatures have remained at record-high levels, giving rise to **marine heat waves (MHWs)** around the globe.
- At present, MHWs have gripped the north-east Pacific, the southern hemisphere in the southern Indian Ocean and the Pacific, the north-east Atlantic, tropical North Atlantic, and the Mediterranean.

About marine heatwaves (MHWs):
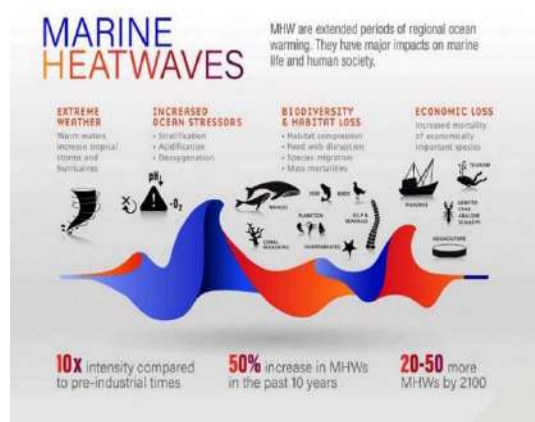
• A marine heat wave is often characterised as a c**oherent region of extremely warm sea surface temperature that lasts for days to months.**
o Marine heat waves occur when sea temperatures are higher than usual for a lengthy period.
• Over the last decade, MHWs have been recorded in all major ocean basins.
o These occurrences are connected to **coral bleaching, seagrass damage, and kelp forest loss,** all of which have a negative impact on the fishing industry.

- According to a study, during the May 2020 maritime heatwave, 85 percent of the corals in the **Gulf of Mannar on the Tamil Nadu** coast bleached.

Causes of marine heatwaves:
- **Summer/ winters:** Heatwaves can occur in both the summer and the winter, when they are referred to as **"winter warm-spells."**
    o These winter occurrences can have serious repercussions, such as in Australia's southeast, where the spiny sea urchin can only colonies farther south when winter temperatures top 12 °C.

- **Ocean Currents:** The most common source of marine heat waves is ocean currents, which may build up patches of warm water and air-sea heat flux, or warming via the ocean surface from the atmosphere.
- **Winds:** Sunlight normally penetrates the atmosphere and heats the ocean's surface. When there are light winds, the warm water does not mix with the cooler water below.
  - It floats on the surface of the water and continues to heat up, resulting in marine heat waves.
- **Climate Change:** Large-scale climate influences such as the **El Nino Southern Oscillation (ENSO)** can too cause marine heatwaves.

Impact of marine heat waves on ocean life

Fish kills:
- Although an increase of 3 or 4 degrees Celsius in average temperatures may not be much for humans, it can be catastrophic for marine life.
- For instance, MHWs along the Western Australian coast during the summer of 2010 and 2011 caused **some "devastating" fish kills.**

Destruction of Kelp forest:
- A different study revealed that the same MHWs destroyed kelp forests and fundamentally altered the ecosystem of the coast.
- Kelps usually grow in cooler waters, providing habitat and food for many marine animals.

Coral bleaching:
- High ocean temperatures in the tropical **Atlantic and Caribbean in 2005** led to a massive coral bleaching event.
- A 2010 study showed that more than 80 per cent of surveyed corals had bleached and over 40 per cent of the total surveyed had died.

Growth of Invasive alien species:
- MHWs also fuel the growth of invasive alien species, which can be destructive to marine food webs.

Change in behavior of species:
- They force species to change their behaviour in a way that puts wildlife at increased risk of harm.
- MHWs have been linked to whale entanglements in fishing gear, according to a report by the **International Union for Conservation of Nature (IUCN).**

Impact of marine heat waves on humans

High intensity of storms:
- Higher ocean temperatures, which are associated with MHWs, can make storms like hurricanes and tropical cyclones stronger.
- With warmer temperatures, the rate of evaporation escalates and so does the transfer of heat from the oceans to the air.
- When storms travel across hot oceans, they gather more water vapour and heat.
- This results in more powerful winds, heavier rainfall and more flooding when storms reach the land — meaning heightened devastation for humans.

Loss of food and livelihood:
- Half a billion people depend on reefs for food, income, and protection.
- So when MHWs destroy these reefs, humans relying on them also bear the brunt.

Way Forward:

Since the frequency, intensity, and area covered by the marine heatwaves are increasing, it is needed to enhance the ocean observational arrays to monitor these events accurately, and update our weather models to skilfully predict the challenges presented by a warming world. Effective responses to MHWs require action

from a broad range of stakeholders: such as policymakers, researchers, the private sector conservationists, and civil society.

Source: [Indian Express](#)

Groundwater status in India

Syllabus

- **Mains – GS 1 (Geography)**

Context: The excessive extraction of groundwater for drinking and irrigation has shifted the Earth's axis of rotation, according to a new study.

Key findings of the study:

- The study says that humans pumped out around **2,150 gigatons of groundwater between 1993 and 2010** and this has led the planet's axis to drift at the rate of 4.36 cm per year towards the east.

Groundwater status in India:

- India is the largest user of groundwater with a **fourth of the total global withdrawal**.
- Indian cities cater to about 48 per cent of its water supply from groundwater.
- The unmanaged groundwater and increasing population may result in **seasonal water shortages by 2050 for an estimated 3.1 billion people** and perpetual water shortage for almost a billion.
- Water and food security will also be compromised and lead to poverty in the cities despite having good infrastructure development.

About Earth's Axis:

- The Earth's axis is the imaginary line through the earth that extends from the North Pole to the South Pole.
- At present, the **Earth's axis is tilted 23.5 degrees from the plane of its orbit around the Sun.**
- During a cycle that averages about 40,000 years, **the tilt of the axis varies between 22.1 and 24.5 degrees.**
- Scientists for years have known that the poles and the axis keep shifting naturally as the mass distribution in and on the planet changes. This phenomenon is known as "**polar motion".**
- For instance, rocks slowly circulating inside Earth's mantle causes the planet's mass to shift, leading to a change in the position of the rotational axis.
- There are several other reasons responsible for polar motion like ocean currents and even hurricanes.

Impact of Climate Change on Polar Motion:
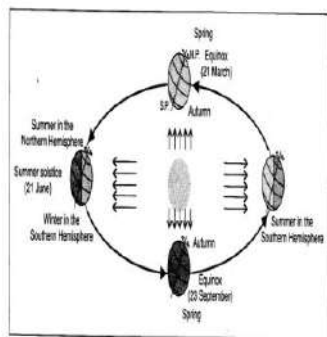
Fig. 3.2

- **Changes in Water Mass Distribution:** Climate change is causing significant changes in the distribution of water masses on Earth.
  - This alteration in water mass distribution affects the planet's rotational dynamics, including polar motion.
- **Melting of Greenland's Ice**: Greenland's ice sheet is particularly susceptible to climate change.
  - As it melts, vast amounts of water are discharged into the surrounding oceans.
  - This influx of water alters the distribution of mass on Earth, leading to shifts in the rotational axis.
- **Accelerated Rotational Axis Shift**: Recent studies suggest that climate change has accelerated the shift of Earth's rotational axis since the 1990s.

Major reasons for groundwater depletion:

- **Green Revolution:** Green Revolution enabled water intensive crops to be grown in drought prone/ water deficit regions, leading to over extraction of groundwater.

- o Frequent pumping of water from the ground without waiting for its replenishment leads to quick depletion.
- o Further, Subsidies on electricity and high MSP (Minimum Support Price) for water intensive crops.

- **Industries Requirement**: Water contamination as in the case of pollution by landfills, septic tanks, leaky underground gas tanks, and from overuse of fertilizers and pesticides leading to damage and depletion of groundwater resources.
- **Inadequate Regulation:** Inadequate regulation of groundwater encourages the exhaustion of groundwater resources without any penalty.
- **Federal Issue:** Water being a State subject, initiatives on water management including water conservation and water harvesting and making available adequate drinkable water to citizens in the Country is primarily States' responsibility.

Impacts:

- **Lowering of the water table:** Groundwater depletion may lower the water table leading to difficulty in extracting groundwater for usage.
- **Reduction of water in streams and lakes:** A substantial amount of the water flowing in rivers comes from seepage of groundwater into the streambed.
  - o Depletion of groundwater levels may reduce water flow in such streams.
- **Subsidence of land:** Groundwater often provides support to the soil. When this balance is altered by taking out the water, the soil collapses, compacts, and drops leading to subsidence of land.
- **Increased cost for water extraction:** As the depleting groundwater levels lower the water table, the user has to delve deep to extract water.
  - o This will increase the cost of water extraction.
- **Contamination of groundwater:** Groundwater that is deep within the ground often intermingles with saltwater that we shouldn't drink.

Initiatives taken by the Government:

- **Atal Bhujal Yojana (Atal Jal):** It is a Rs. 6000 crore Central Sector Scheme with World Bank assistance, for sustainable management of ground water resources with community participation.
- **Jal Shakti Abhiyan (JSA):** It was launched in 2019 in 256 water stressed districts in the country to improve water availability including ground water conditions in these areas.
- It has special emphasis on creation of recharge structures, rejuvenation of traditional water bodies, intensive afforestation etc.

- **Aquifer Mapping and Management Programme:** The **Central Ground Water Board** (CGWB) has taken up Aquifer Mapping and Management Programme.
  - The program is aimed to delineate aquifer disposition and their characterization for preparation of aquifer/ area specific groundwater management plans with community participation.

- **[Atal Mission for Rejuvenation and Urban Transformation](#) (AMRUT):** The Mission focuses on development of basic urban infrastructure in the AMRUT cities, such as water supply, sewerage & septage management, storm water drainage, green spaces and parks, and non-motorized urban transport.

Way Forward:

The study's results emphasize the need to recognize the far-reaching consequences of human activities on the Earth's delicate equilibrium. Groundwater extraction, driven by agricultural and freshwater needs, has been found to impact the planet's rotational axis, leading to polar motion and contributing to global sea level rise.
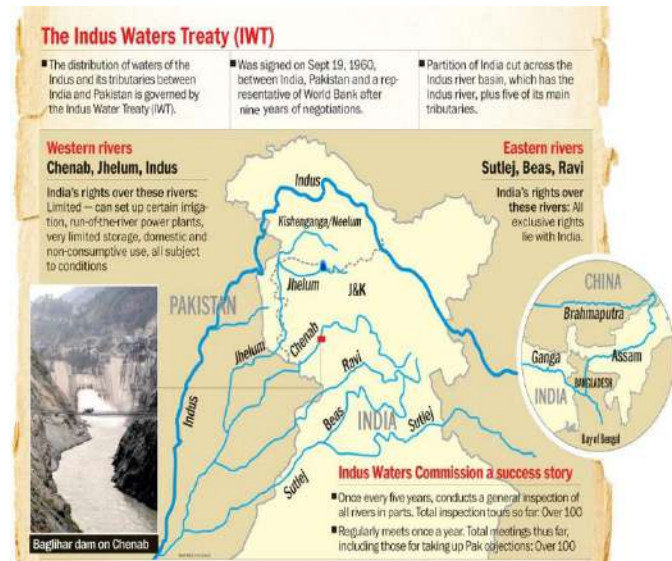
Therefore, understanding these interactions is crucial for effective environmental management and sustainable practices to mitigate the adverse effects of human-induced changes on our planet.

Source: **[Indian Express](#)**

Indus Waters Treaty 1960 (IWT)

Syllabus

- **Mains – GS 1 (Geography) and GS 2 (International Relations)**

Context: India announced that it wants to modify the 62-year-old IWT with Pakistan, citing what it called Pakistan's "intransigence" in resolving disputes over **the Kishenganga and Ratle hydropower projects**, both in Jammu and Kashmir.

About Indus Water Treaty:

- In 1960, India and Pakistan signed the **Indus Waters Treaty with the [World Bank](#)** as a signatory of the pact.
- Under the treaty, **India got control over the three eastern rivers Beas, Ravi, and Sutlej** while **Pakistan got control of the western rivers Indus, Jhelum, and the Chenab.**
- According to the treaty, India has the right to generate hydroelectricity through the **run-of-the-river (RoR)** projects on the western rivers, which, are subject to specific criteria for design and operation.

Background of the Indus Water Dispute:

- In 1947, the line of partition also cut the Indus river system into two parts.
- Both the sides were dependent on water from the Indus river basin to keep their irrigation infrastructure functional.
- In May 1948, initially the Inter-dominion accord was adopted.
- This accord decided that India would supply water to Pakistan in exchange for an annual payment made by Pakistan.

- o This agreement however, soon disintegrated, as both the countries could not agree upon its common interpretations.
- Due to the **water-sharing dispute in 1951,** both the countries applied to the World Bank for funding of their respective irrigation projects on the Indus and its tributaries.
  - o At this point of time, the World Bank offered to mediate the conflict.
- Finally, in 1960, after nearly a decade of fact-finding, negotiation, proposals by the World Bank and amendments to them, an agreement was reached between the two countries.
- The Indus Waters Treaty (IWT) was signed by former **Prime Minister Jawaharlal Nehru and then President of Pakistan, Ayub Khan.**

Key Provisions:
Water Sharing:
- The treaty prescribed how water from the six rivers of the Indus River System would be shared between India and Pakistan.
- It allocated the three western rivers—Indus, Chenab and Jhelum—to Pakistan for unrestricted use, barring certain non-consumptive, agricultural and domestic uses by India and the three Eastern rivers—Ravi, Beas and Sutlej—were allocated to India for unrestricted usage.
- This means that 80% of the share of water went to Pakistan, while leaving the rest 20% of water for use by India.

Permanent Indus Commission:
- It also required both the countries to establish a Permanent Indus Commission constituted by permanent commissioners on both sides.
- According to the provisions of the IWT, the Permanent Indus Commission is required to meet at least once a year.

Rights over Rivers:
- While Pakistan has rights over the **waters of Jhelum, Chenab and Indus, Annexure C of the IWT allows** India certain agricultural uses, while Annexure D allows it to build 'run of the river' hydropower projects, meaning projects not requiring live storage of water.

Dispute Resolution Mechanism:
- The IWT provides a three-step dispute resolution mechanism under **Article IX of the Indus Waters Treaty,** under which "questions" on both sides can be resolved at the Permanent Commission, or can also be taken up at the inter-government level.
- In case of unresolved questions or "differences" between the countries on water sharing, such as technical differences, either side can approach the **World Bank to appoint a Neutral Expert (NE) to come to a decision.**
- In addition, eventually, if either party is not satisfied with the NE's decision or in case of "disputes" in the interpretation and extent of the treaty, matters can be referred to a Court of Arbitration.

Problem with Hydroelectric Projects:
- Pakistan has objected to the two hydroelectric power projects (HEPs):
  - o The 330 MW **Kishenganga HEP** on the Kishenganga River, a tributary of the river Jhelum.
  - o The 850 MW Ratle HEP on the Chenab River.
- Both India and Pakistan differed on whether the technical details of the hydel projects conformed with the treaty, given that the **Jhelum and Chenab** were part of the "western tributaries".

Significance of the treaty

- **Testimonial to peaceful coexistence**: It is a treaty that is often cited as an example of the possibilities of peaceful coexistence that exist despite the troubled relationship.
- The IWT is the only agreement between India and Pakistan that has stood the test of time, through wars and terrorism.
- **Survived many hostilities**: It has survived three crucial wars.
- **Most successful bilateral treaty**: It is internationally regarded as an example of successful conflict resolution between two countries otherwise locked in a hostile relationship.

Way forward

In the last six decades, the **Indus Waters Treaty** has been successful in keeping the water sharing disputes at bay, which signifies its importance. However, in the present times of climate crisis coupled with natural disasters the demands of water sharing of both the countries have changed.

Therefore, there is a need to **renegotiate the treaty terms**, **update certain technical specifications and expand the scope of the agreement** to address demands of the two countries amid the rising climate crisis.

Source: **The Hindu**

Marital Rape in India

Syllabus
- **Mains – GS 1 (Society) and GS 2 (Governance)**

Context: The Supreme Court would list a batch of petitions pertaining to the matters related to marital rape.

About Marital rape:
- Marital rape (or spousal rape) is an act in which **one of the spouses indulges in sexual intercourse without the consent of the other.**
- Rape in India continues with the patriarchal outlook of considering women to be the property of men post marriage, with no autonomy or agency over their bodies.
- They deny married women equal protection of the laws guaranteed by the Indian constitution.
- Today, more than 100 countries have criminalized marital rape but, unfortunately, India is one of the only 36 countries where marital rape is still not criminalized.

Current Scenario:
- Marital rape has been impeached in more than 100 countries but, unfortunately, India is one of the **only 36 countries** where **marital rape is still not criminalized.**
- In 2013, the **UN Committee on Elimination of Discrimination against Women (CEDAW)** recommended that the Indian government should criminalize marital rape.
- The **JS Verma committee** set up in the aftermath of nationwide protests over the December 16, 2012 gang rape case had also recommended the same.
   - As per the NCRB report, in India, a woman is raped every 16 minutes, and every four minutes, she experiences cruelty at the hands of her in-laws.
- **National Family Health Survey (NFHS)** shows that sexual violence is most often committed by individuals with whom women have an intimate relationship.

Section 375 of the Indian Penal Code
- It defines rape as **"sexual intercourse with a woman against her will, without her consent, by coercion, misrepresentation or fraud or at a time** when she has been intoxicated or duped, or is of unsound mental health and in any case if she is under 18 years of age.
   - Consent is defined as clear, voluntary communication that the woman gives for a certain sexual act.

- **Exceptions to Section 375:** Sexual intercourse by a man with his own wife, who is above the age of 18, is not sexual assault.
- **Punishment**: Except in certain aggravated situations, the punishment will be imprisonment of not less than seven years but it may extend to imprisonment for life, and shall also be liable to fine.
  - o In aggravated situations, punishment will be rigorous imprisonment for a term which shall **not be less than 10 years** but which may extend to imprisonment for life, and shall also be liable to fine.

Arguments for criminalizing Marital Rape
- **The doctrine of Coverture:** The marital exception to the IPC's definition of rape was drafted based on Victorian patriarchal norms that did not recognize men and women as equals.
  - o It did not allow married women to own property, and merged the identities of husband and wife under the **"Doctrine of Coverture."**
- **Article 14:** Indian women deserve to be treated equally under article 14 and an individual's human rights do not deserve to be ignored by anyone, including by their spouse.
  - o Further, a married woman has the same right to control her own body, as does an unmarried woman.
- **Bodily Integrity is intrinsic to Article 21**: A woman is entitled to refuse sexual relations with her husband as the right to bodily integrity and privacy is an intrinsic part of **Article 21 of the Constitution.**
  - o Supreme Court has included sanctity of women, and freedom to make choices related to sexual activity under the ambit of Article 21.
- **In the State of Karnataka v. Krishnappa,** the Supreme Court held that sexual violence apart from being a dehumanizing act is an unlawful intrusion of the right to privacy and sanctity of a female.
- **In the Suchita Srivastava v. Chandigarh Administration**, the Supreme Court equated the right to make choices related to sexual activity with rights to personal liberty, privacy, dignity, and bodily integrity under **Article 21 of the Constitution**.
- **Rape not ground for Divorce**: As marital rape is not a ground for a divorce in any personal laws and even the **Special Marriage Act, 1954**, It cannot be used as a ground for divorce and cruelty against the husband Thus, the women remain helpless and keep suffering in silence.
  - o Rape is rape, irrespective of the identity of the perpetrator, and the age of the survivor.
  - o A woman who is raped by a stranger lives with a memory of a horrible attack; a woman who is raped by her husband lives with her rapist throughout her life .
- **Criminalizing marital rape:** It will ensure that women remains safer from abusive spouses and they can receive the help needed to recover from marital rape and can save themselves from domestic violence and sexual abuse
  - o The United Kingdom, whose common law was followed by India, made marital rape a criminal offence in 1991.

Arguments against criminalising marital rape:
- **Threat to the institution of marriage**: Criminalisation of marital rape is often viewed as a threat to the institution of marriage, in which both the spouses have conjugal rights over each other.
- **Conjugal rights:** Section 9 of the **Hindu Marriage Act** gives either spouse in a marriage the legal right **to "restitution of conjugal rights".**
- **Misuse of the law** is a big reason why several individuals, jurists and even men's rights activists have raised alarm over the criminalisation of marital rape.

- o According to some activists, as huge as **85% of dowry cases turn out to be false and India cannot deal** with another failed catastrophic law that will amount to **"legal terrorism".**
- **Burden of proof:** The burden of proof is a hugely complex issue that has prevented marital rape to be criminalised.
  - o In the case of marital rape, one has to consider that intercourse is a part of any marriage.
  - o Now, if marital rape itself is criminalised, the question remains who would the burden of proof be on and what would that burden be.
- **Gender Neutrality**: Arguments to make the **definition of 'rape' gender-neutral** have been put forward on many occasions, and the same argument is put forward in the case of marital rapes too.
  - o Even if the **exception of IPC section 375** is removed or criminal provisions are added to the **Domestic Violence act**, husbands will not be able to use those.

Way Forward

It is high time that the legislature should take cognisance of this legal infirmity and bring marital rape within the **purview of rape laws by eliminating Section 375 (Exception) of IPC**. By removing this law, women will be safer from abusive spouses.

It is important that legal prohibition on marital rape is accompanied by changes in the attitude of the prosecutors, police officers and those in society generally. The need of the hour is that marriage and divorce must come under secular law and there cannot be any difficulty in having a common code of law for all communities at least for marriage and divorce.

Source: The Hindu

GS Paper-2
Data Protection Bill 2022

Syllabus

- **Mains – GS 2 (Governance) and GS 3 (Science and Technology)**

Context: The Union Cabinet cleared the Digital Personal Data Protection (DPDP) Bill 2022, paving the way for it to be introduced in Parliament.

History of Digital Personal Data Protection:

- In 2017, the **K.S. Puttaswamy vs. Union of India** judgement declared that right to privacy a fundamental right as part of right to life and liberty under **Article 21 of the Constitution.**
- To protect the personal data the data protection Bill has been in the works since 2018 when a panel led by Justice B N Srikrishna had prepared a draft version of the Bill.
- It is India's first attempt to domestically legislate on the issue of data protection.
- The government has revised this draft and introduced it as **the Digital Personal Data Protection Bill, 2022.**

Provisions of the Bill:

- The Bill will apply to the **processing of digital personal data** in India, whether it is collected online or offline and then digitized.
  - o It will also apply to the processing of digital personal data outside of India if it involves offering goods or services or profiling individuals in India.
- Personal data may be **processed only for a lawful purpose** for which an individual has given consent.
  - o **Consent may be deemed in certain cases**.
- Data fiduciaries will be **obligated to maintain the accuracy of data, keep data secure, and delete data** once its purpose has been met.
- The Bill grants **certain rights to individuals** including the **right to obtain information, seek correction and erasure, and grievance redressal.**

- The central government **may exempt government agencies** from the application of provisions of the Bill in the interest of specified grounds such as security of the state, public order, and prevention of offences.
- The central government will **establish the Data Protection Board of India** to adjudicate non-compliance with the provisions of the Bill.

Significance of personal data protection in India:

- **Privacy protection**: It guarantees that an individual's privacy is not breached, as was the case with the Aadhaar data leak in 2018.
  - o It helps to avoid identity theft and other types of fraud.
  - o For example, consider the **2018 Cambridge Analytica controversy**.
- **Data accuracy** is ensured through personal data protection, which guarantees that the data is correct and up to date.
- Personal data **protection avoids data abuse and unlawful access**, as shown in the WhatsApp data-sharing scandal in 2021.
- Personal data protection **guarantees that data is safe and protected from cyberattacks**.
- Personal data **protection secures sensitive data**, such as the health and financial data of persons, as well as sensitive health data.
- **Individual empowerment:** As previously said in **2018 Justice Srikrishna Committee Report Recommendations,** personal data protection empowers people by giving them control over their personal data.
- **Compliance with worldwide standards:** Compliance with global data protection standards, such as GDPR compliance, requires personal data protection.

Concerns associated with the Bill:

- **Government Control:** The Bill is learnt to have prescribed that the central government can exempt **"any instrumentality of the state"** from adhering to the provisions because of national security, relations with foreign governments, and maintenance of public order among other things.
  - o The control of the central government in appointing members of the data protection board — an adjudicatory body that will deal with privacy-related grievances and disputes between two parties — is learnt to have been retained as well.
- **Dilutes the** [Right to Information (RTI) Act] as personal data of government functionaries is likely to be protected under it, making it difficult to be shared with an RTI applicant.
- **No Criminal Liability**: The Bill only prescribes monetary penalties (**under Schedule 1 of the DPDP Bill)** for breaches and non-compliances and limits such penalties to breaches/non-compliances that the Data Protection Board determines to be 'significant'.
  - o The DPD Bill has done away with criminal liabilities, as well as penalties that are directly linked to the turnover or revenue of an erring Data Fiduciary.
  - o Penalties vary from INR 50 crore to INR 250 crore. Section 25 stipulates maximum penalty to be limited to INR 500 crore.
- **Data of Children:** The Bill requires parental consent for age less than 18 years.
  - o Parental consent would be required every time they want to access the internet.

Global Scenario:

- **EU model**: The GDPR focuses on a comprehensive data protection law for processing of personal data.

o It has been criticized for being excessively stringent, and imposing many obligations on organizations processing data, but it is still the template for most of the legislation drafted around the world.

- **US model:** Privacy protection is largely defined as "liberty protection" focused on the protection of the individual's personal space from the government.
  - o It is viewed as being somewhat narrow in focus, because it enables collection of personal information as long as the individual is informed of such collection and use.
- **China model:** New Chinese laws on data privacy and security issued over the last 12 months include the **Personal Information Protection Law (PIPL),** which came into effect in November 2021.
  - o It gives Chinese data principals new rights as it seeks to prevent the misuse of personal data.

Way Forward:

While protecting the rights of the data principal, data protection laws need to ensure that the compliances for data fiduciaries are not so onerous as to make even legitimate processing impractical.

The challenge lies in finding an adequate balance between the right to privacy of data principles and reasonable exceptions, especially where government processing of personal data is concerned.

Source: **Indian Express**

Delimitation Commission

Syllabus

- **Mains – GS 2 (Polity and Governance)**

Context: Recently, Delimitation Commission finalize the Delimitation Order for the Union Territory of Jammu and Kashmir.

About Delimitation Commission of India:

- The **Delimitation Commission of India**, also known as the **Boundary Commission of India**, is a commission established by the Indian government under the provisions of the **Delimitation Commission Act.**
- The commission's principal responsibility is to redraw the borders of the various assembly and Lok Sabha constituencies based on a recent census.
  - o During this practice, the representation from each state remains constant.
- Delimitation is the process of redrawing boundaries of **Lok Sabha and State Assembly constituencies** based on a recent census to ensure that each seat has an almost equal number of voters.
- The Commission is **appointed by the President of India** and works in collaboration with the **Election Commission of India**.
- **Composition:**
  - o Retired Supreme Court judge
  - o Chief Election Commissioner
  - o Respective State Election Commissioners
- Delimitation Commissions have been set up four times — **1952, 1963, 1973 and 2002** under the Acts of 1952, 1962, 1972 and 2002.
- The first delimitation exercise was carried out by the President (with the help of the Election Commission) in 1950-51.

History:

- The last delimitation exercise that changed the state-wise composition of the Lok Sabha was completed in 1976 and done based on the 1971 census.

- The Constitution of India mandates that the allocation of seats in the Lok Sabha should be based on the population of each state so that the ratio of seats to population is as close as possible to being equal across all states.
- It is intended to ensure that each person's vote carries roughly the same weight, regardless of which state they live in.
- However, this provision meant that states that took little interests in population control could end up with a greater number of seats in Parliament.
- To avoid these consequences, the constitution was amended **42nd Amendment Act of 1976** froze the allocation of seats in the Lok Sabha to the states and the division of each state into territorial constituencies till the year 2000 at the 1971 level.
- The **84th Amendment Act of 2001** empowered the government to undertake readjustment and rationalization of territorial constituencies in the states based on the population figures of 1991 census.
- The **87th Amendment Act of 2003** provided for the delimitation of constituencies based on 2001 census and not 1991 census.
- However, this can be done without altering the number of seats allotted to each state in the Lok Sabha.

Constitutional Provisions:
- Under **Article 82**, the Parliament enacts a **Delimitation Act after every Census**.
- Under **Article 170**, States also are divided into territorial constituencies as per **Delimitation Act after every Census.**

Significance of Delimitation Commission:
Independent Body:
- The Delimitation Commission operates independently of the executive branch and political parties, ensuring its impartiality and non-partisan nature.
- This independence is crucial for the credibility and integrity of the delimitation process.

Finality of Decisions:
- Once the Delimitation Commission issues its final order, its decisions are considered binding and cannot be challenged in court or overturned through legislative means. This ensures stability and avoids unnecessary disputes regarding constituency boundaries.

Equitable Distribution:
- The commission's focus on equal population representation in constituencies helps prevent disparities and ensures that every vote has an equal impact. It enhances the democratic fabric of the country by promoting fair representation and preventing concentration of power.

Reliance on Census Data:
- The Delimitation Commission bases its decisions on the most recent census data. By using reliable and accurate demographic information, it ensures that constituency boundaries are redraw

Concerns Related to Delimitation:
Regional Disparity:
- Disparity in representation between north and southern part of India in the Lok sabha due to population as a deciding factor.
- The delimitation based solely on population disregards the progress made by the southern states in population control and may lead to disparities in the federal structure.
- Despite having only 18% of the country's population, the southern states contribute 35% to the country's GDP.

- The northern states, which did not prioritize population control, are expected to benefit in the delimitation process due to their higher population growth.

Inadequate Funding:
- After the **15th Finance Commission** used the 2011 Census as a basis for its recommendation, concerns were raised about southern states losing funding and representation in parliament.
- Previously, the 1971 Census was used as the base for funding and tax devolution recommendations to states.

Affecting the Reservations for SCs/ STs:
- The scheduled delimitation and reallocation of seats may result in not only a loss of seats for southern states but also an increase in power for political parties with their base of support in the north.
- This could potentially lead to a shift of power toward the north and away from the south.
- The exercise will also affect the division of seats reserved for the **Scheduled Castes and Scheduled Tribes (SC/ST)** in each state (under **Articles 330 and 332**).

Way Forward:
The current process of delimitation has been successful in ensuring democratic representation in India though there are certain concerns. To address the concerns and further reform the process an independent committee should be set up to review the process involving all stakeholders and suggest reforms and should ensure fair representation of people in the electoral process and promotion of democracy.

Source: **The Hindu**

Uniform Civil Code

Syllabus
- **Mains – GS 1 (Society) and GS 2 (Polity and Governance)**

Context: Recently, Prime Minister of India emphasized the crucial need for the implementation of a Uniform Civil Code (UCC) in India.

About Uniform Civil Code (UCC):
- The Uniform Civil Code (UCC) calls for the **formulation of one law for India,** which would be applicable to **all religious communities in matters such as marriage, divorce, inheritance, adoption.**

History of Uniform Civil Code:
- It dates back to colonial India when the **British government submitted its report in 1835 stressing the need for uniformity** in the codification of Indian law relating to crimes, evidence, and contracts, specifically recommending that personal laws of Hindus and Muslims be kept outside such codification.
- An increase in legislation dealing with personal issues at the far end of British rule forced the government to form the **B N Rau Committee** to **codify Hindu law in 1941**.

Personal Laws in India:
- Currently, not only Muslims but also **Hindus, Jains, Buddhists, Sikhs, Parsis, and Jews** are governed by their own personal laws.
  - Personal laws are determined based on religious identity.
- The reformed Hindu Personal Law still incorporates certain traditional practices.
- Differences arise when Hindus and Muslims marry under the **Special Marriage Act,** where Hindus continue to be governed by Hindu Personal Law, but Muslims are not.

Constitutional Provisions:
- **Article 37:** The "state shall endeavour by suitable legislation", while the phrase "by suitable legislation" is absent in Article 44.
- **Article 44:** The "State shall endeavour to provide for its citizens a uniform civil code (UCC) throughout the territory of India."

Arguments for Uniform Civil Code:

It will promote integration of India:

- It will promote the integration of India by establishing a shared platform for diverse communities.
- Personal laws rooted in religion are a challenge to the unity of the nation.
- The implementation will promote the integration of India by establishing a shared platform for diverse communities.

Ease for Supreme Court of India:

- The **Supreme Court** will find it easy to deal with cases involving marriage, divorce, property rights etc. because presently it faces conflict situation due to different laws for the above subjects.

It will fulfill constitutional objective:

- The implementation of a Uniform Civil Code (UCC) is a constitutional objective aimed at ensuring equitable justice for all communities.
- It would be ideal for India to establish a codified family law that aligns with progressive interpretations of religious texts and upholds constitutional principles of justice and equality.

Reforming the Shariat law:

- The **Shariat Application Act of 1937** lacks provisions pertaining to significant elements including the minimum age for marriage, consent, meher (dowry), divorce proceedings, polygamy, child custody and guardianship, as well as women's entitlement to property.
    - As a result, the **practice of child marriages continues to endure**.
- These practices are deemed justified based on the principles of sharia law, which stipulates that a girl becomes eligible for marriage upon reaching the age of puberty.

Arguments against the uniform civil code:

- **Violation of religious freedom:** Critics argue that the UCC may infringe upon the freedom to practice the religion of one's choice, which allows religious communities to follow their own personal laws.
    - For example, **Article 25 of the Indian constitution** gives every religious group the right to manage its own affairs, and **Article 29** allows them to conserve their distinct culture.
- **Threat to cultural diversity:** Another argument against the UCC is the threat it could pose to India's rich cultural diversity.
    - Critics argue that individual personal laws reflect the distinct customs and traditions of different religious communities, and a uniform code could undermine this diversity.
    - They contend that the UCC could lead to a homogenization of laws, which would not be in keeping with India's multicultural ethos.
- **Existing secular laws:** Critics also question the need for a UCC, pointing out that there are already secular laws applicable to all citizens, irrespective of religion, in many matters, such as **Section 125 of the Criminal Procedure Code**, which provides for maintenance, and laws relating to domestic violence.
- **Imposition of 'Hinduised' Code**: Some critics suggest that the UCC might impose a 'Hinduised' code on all communities.
    - For example, a UCC could include provisions for family disputes on property inheritance, which may be in line with Hindu customs and will legally force other communities to follow the same.
- **Diversity in personal laws:** The opposition argues that even codified civil laws and criminal laws like the **Code of Criminal Procedure (CrPC) and the Indian Penal Code (IPC) do not follow 'one nation, one law'**.
    - For example, the law of anticipatory bail differs from one state to another.

- **Personal laws placed in concurrent list:** Some constitutional law experts argue that perhaps the framers did not intend total uniformity, which is why personal laws were placed in **Entry 5 of the Concurrent List,** with the power to legislate being given to the **Parliament as well as the State Assemblies.**

Important Cases Related to UCC:

Shah Bano Begum v. Mohammad Ahmed Khan (1985):
- The Supreme Court upheld the right of a Muslim woman to claim maintenance from her husband under **Section 125 of the Criminal Procedure Code**, even after the expiry of the Iddat period.
- It also observed that a UCC would help in removing contradictions based on ideologies**.**

Shayara Bano v. Union of India (2017):
- The Supreme Court declared the **practice of triple talaq** as unconstitutional and violative of the dignity and equality of Muslim women.
- It also recommended that the **Parliament should enact** a law to regulate Muslim marriages and divorces.

Way Forward:
UCC is a complex issue that requires careful consideration of religious, cultural, and societal perspectives.
Balancing the unity and diversity of India is crucial, as the implementation of a UCC should aim to provide equal rights and opportunities while respecting the distinct identities of different communities.
Source: **The Hindu**

National Research Foundation (NRF)

Syllabus
- **Mains – GS 2 (Governance)**

Context: The Union Cabinet, chaired by the PM of India, approved the National Research Foundation (NRF) Bill 2023; to give the nation's scientific research a strategic direction.

About NRF:
- **Apex Body:** The NRF will be established as the highest governing body for scientific research, in accordance with the recommendations of the National Education Policy (NEP).
- **Department of Science and Technology's Role:** The DST will serve as the administrative department of the NRF, with a Governing Board consisting of eminent researchers and professionals from various disciplines.
- **Leadership Structure:** PM will be the ex-officio President of the Board, while the Union Minister of Science & Technology and the Union Minister of Education will be the ex-officio Vice-Presidents.
- **Functioning:** The Principal Scientific Adviser will chair the Executive Council responsible for NRF's functioning.

Salient Features of the NRF Bill 2023: The NRF Bill 2023, which aims to establish the National Research Foundation (NRF) in India, has several salient features, including:
- **Establishment of NRF**: The bill provides for the establishment of the National Research Foundation, which will serve as a platform to support and promote research and development activities across universities, colleges, research institutions, and R&D laboratories in India.
- **Culture of Research and Innovation:** The NRF aims to foster a culture of research and innovation by providing funding, resources, and support for R&D initiatives. It intends to create an environment that encourages and nurtures scientific research and innovation.
- **Repeal of SERB:** The proposed bill repeals the **Science and Engineering Research Board (SERB),** which was established by Parliament in 2008.
  - The SERB, which operates under the **Department of Science and Technology (DST), will be subsumed into the NRF.**

o   This consolidation is aimed at streamlining and strengthening the research funding process.

- **Funding and Support**: The NRF will play a crucial role in providing funding and support for scientific and technological research projects, including funding for S and T start-ups, establishment of incubators, and financing science-related initiatives in central and state universities.

Significance of NRF:

- **Addressing Regional Imbalances**: One of the key significance of NRF is its focus on funding projects in peripheral, rural, and semi-urban areas that often remain neglected in terms of science funding.
  - o   By prioritizing research in these areas, the NRF aims to bridge the regional imbalances and promote scientific development across the country.
- **Multidisciplinary Research**: The NRF goes beyond traditional boundaries by promoting research not only in the natural sciences and engineering but also in social sciences, arts, and humanities.
  - o   This multidisciplinary approach recognizes the interconnectedness of different fields and encourages holistic research that can address complex societal challenges and foster innovation.
- **Implementation of Missions:** The NRF will play a crucial role in the implementation of various missions, such as the supercomputer mission or the quantum mission.
  - o   These missions are aimed at advancing specific areas of scientific research and technological development.
  - o   The NRF's involvement will provide the necessary funding, support, and coordination to drive these missions effectively and achieve their objectives.
- **Research and Innovation Ecosystem**: By bringing together academia, industry, government departments, and research institutions, the NRF strengthens the research and innovation ecosystem in the country.
  - o   It creates a platform for collaboration, knowledge exchange, and partnerships, fostering an environment where research ideas can thrive, innovations can be commercialized, and societal impact can be realized.

Way Forward:

The Research and Development in frontier areas is key to India's ambition to grow as an economic and tech superpower. Therefore, the real R and D is about finding answers to questions that have not yet been asked. The NRF is the instrument to prepare our individuals and institutions for that future-ready task.

Source: **Indian Express**

Biological Diversity (Amendment) Bill, 2021

Syllabus

- **Mains – GS 2 (Governance) and GS 3 (Environment)**

Context: The Lok Sabha recently passed the Biological Diversity (Amendment) Bill, 2021 that aims to amend the **Biological Diversity Act, 2002.**

Objectives of the Bill:

- **Benefitting tribes and vulnerable communities:** The main objective of the amendment is to ensure that tribes and vulnerable communities derive benefits from the proceeds of medicinal forest products.
- **Encouraging ayurveda and ease of doing business**: The amendment decriminalizes certain activities, encouraging the practice of Ayurveda and promoting ease of doing business in the Ayurveda sector.
- **Simplifying patent application processes:** The amendment aims to simplify patent application processes for traditional Indian medicine practitioners, researchers, and industry players, facilitating collaborative research and investments.

- **Widening scope of access and benefit sharing:** The bill also proposes to widen the scope of levying access and benefit sharing with local communities to further conserve biological resources.

Salient Features of the Biological Diversity (Amendment) Bill, 2021

- **Exemption for AYUSH practitioners:** The Bill exempted **registered AYUSH medical practitioners** from the requirement of giving prior intimation to State Biodiversity Boards for accessing biological resources purposes.
  - This exemption aimed to facilitate easier access for traditional medicine practitioners to biological resources for medicinal purposes.
- **Exemption for cultivated medicinal plants:** The Bill excluded cultivated medicinal plants from the purview of the Biological Diversity Act.
  - This meant that access to cultivated medicinal plants for various purposes would not be subject to the regulations and requirements of the Act.
- **Fast tracking of research and patent application**: The Bill proposed to fast track the process of research and patent applications related to biological resources.
  - This provision aimed to encourage and expedite research and innovation in the field of biodiversity and its applications.
- **Change in offences classification**: The Bill proposed to change the nature of violations of the law related to access to biological resources and benefit sharing with communities.
  - Currently treated as criminal offences that are non-bailable, the Bill sought to make these violations civil offences.
- **Foreign Investment in biodiversity research**: The Bill allowed foreign investment in research related to biodiversity.
  - However, it stipulated that such investment should be made through Indian companies involved in biodiversity research exclusively.
- **Introduction of member-secretary post:** The Bill introduced the post of 'Member-Secretary' to be appointed by the Central Government.
- The **Member-Secretary** would serve as the chief coordinating officer and convener of the **National Biodiversity Authority (NBA)** and assist the Authority in discharging its functions under the **Biological Diversity Act**.

Criticism of the Bill

- **Risk of biopiracy:** One of the main concerns is that easing the norms and giving exemptions could open the door to biopiracy.
  - Biopiracy refers to the unauthorized commercial exploitation of biological resources or traditional knowledge belonging to indigenous and local communities.
- **Exemption of AYUSH companies:** This exemption is seen as a violation of a 2018 judgement by the **Uttarakhand High Court** that mandated all companies, both foreign and Indian, to seek prior consent and approval for access and benefit-sharing with local communities.
- **Violation of forest rights act:** The Bill is seen to be in violation of the Forest Rights Act, 2006, which recognizes and authorizes the Gram Sabha (village council) for prior permission and approval in case of any access to forests.
- **Dilution of penal provisions**: The Bill has been criticized for diluting the penalty provisions.

Way Forward:

The Biological Diversity (Amendment) Bill, 2021, aims to address concerns related to the existing Act and promote the **benefits of medicinal forest products to tribes and vulnerable communities.** While the

government states that the amendment will encourage Ayurveda and ease of doing business, environmentalists raise concerns about the **potential for "bio-piracy" and lack of clarity on benefit sharing**. Striking a balance between promoting traditional knowledge and protecting biodiversity will be crucial for the effective implementation of the amendment.

Source: [The Hindu](#)

India-UAE Relations

Syllabus

- **Mains – GS 2 (International Relations)**

Context: During Prime Minister Narendra Modi's recent visit to the UAE, the RBI and its counterpart the Central Bank of the UAE signed two memoranda of understanding (MoUs).

- While the first established a framework to promote the use of local currencies for cross-border transactions, the other was for interlinking payment systems.

India-UAE Bilateral Relations

Political and Diplomatic Relations:

- India and the UAE have established a comprehensive strategic partnership, leading to high-level visits and engagements.
- This includes the historic visit of the **Indian Prime Minister to the UAE in 2015**, which marked the beginning of a new strategic partnership.
    - The UAE's Crown Prince also visited India in 2017.
- The two countries have institutionalized their political and diplomatic engagements through mechanisms like the UAE-India Strategic Dialogue.
- India was invited as the **Guest of Honour for the sixth World Government Summit**. For this, Prime Minister of India paid a State visit to the UAE in February 2018 further enriching the rapport established at the highest political levels between India and the UAE.
- Modi's last visit to the UAE was in August 2019, when he received the **UAE's highest award, 'Order of Zayed'.**

Trade and Investment:

- The UAE is **India's third-largest trade partner and second-largest export destination.**
- Bilateral trade reached approximately **USD 72 billion in the fiscal year 2021-22.**
- The UAE has made substantial investments in India, with sectors such as construction development, power, air transport, tourism, and metallurgical industries receiving significant investment.
- The first meeting of the **Joint Committee of the India-UAE Comprehensive Economic Partnership Agreement (CEPA)** that took place recently, in which the target of achieving USD 100 billion in bilateral trade by 2030 was set.
- The **CEPA, which was implemented in May 2022**, aims to promote economic cooperation and enhance trade relations between India and the UAE.
    - It focuses on expanding non-oil sectors of trade, indicating that **the target of USD 100 billion** will not include oil trade.
- To facilitate the implementation of the agreement and address various trade-related issues, several sub-committees and councils will be established.
- One such sub-committee will specifically handle matters pertaining to services trade.
- **India's major export items to the UAE are** Precious Metals, Stones, Gems & Jewellery, Minerals & Refined Petroleum Products, Food Items (Cereals, Sugar, Fruits & Vegetables, Tea, Meat, and Seafood),

Textiles (Garments, Apparel, Synthetic fiber, Cotton, Yarn) and Engineering & Machinery Products and Chemicals.

- **India's major import items from the UAE are** Petroleum and Petroleum Products, Precious Metals, Stones, Gems & Jewellery, Minerals, Chemicals, Wood & Wood Products.

Defence and Security Cooperation:

- Bilateral Defence Interaction between India and UAE has been steadily growing in accordance with other aspects of the bilateral relationship.
- There have been regular high level and functional level exchanges between the two countries.
- The ships of the **Navies of both countries** have regularly made port calls enhancing bilateral defence co-operation.
- India and UAE signed a comprehensive strategic partnership in 2017, and hold annual defence dialogues.
  - More recently, UAE is a key part of the **Indian Ocean Region dialogue.**
- Both sides take part in military exercises with each other and there have been several military chiefs' visits.
- The maiden **bilateral naval exercise 'Gulf Star 1'** took place in March 2018.
- **'Desert Eagle II'**, a ten-day air combat exercise, was held between the air forces of India and UAE.

Space Cooperation

- Space is a new arena in which India and the UAE have collaborated through the work of **the UAE Space Agency (UAESA) and the Indian Space Research Organization (ISRO).**
- Space cooperation between India and the UAE gained quick momentum during Prime Minister Modi's visit to the Emirates in 2015.
- Together, the two space agencies have **developed the nano-satellite, Nayif-1**, which was launched from the **Satish Dhavan Space Centre, Sriharikota in India.**
- The two countries are likely to work together on Emirates' **'Red planet Mission'.**

Indian Community:

- The Indian expatriate community of approximately **3.4 million is the largest ethnic community in UAE** constituting roughly about **35% of the country's population.**

Challenges in India-UAE Relations:

- **Slow implementation of investments:** The establishment of a $75 billion investment fund by the UAE for infrastructure projects in India, announced in 2015, has faced delays in finalizing the modalities and governance structure.
  - This slow implementation hampers the realization of investment commitments.
- **Lack of clarity and transparency:** Indian companies operating in the UAE often face challenges due to a lack of clarity in commercial regulations and labor laws.
  - Additionally, a lack of transparency on the part of Emirati businesses adds to the difficulties faced by Indian companies.
- **Issues concerning the Indian diaspora:** Indian migrants in the UAE face cumbersome and strict regulations, particularly in relation to Emirati employers.
  - Problems such as favouritism towards workers of other nationalities and a slight drop in remittances inflow from the UAE to India have been observed.
- **Influence of the Pakistan factor:** Historical and civilizational ties between India and the Gulf region are strained due to the influence of the Pakistan factor.

- o Political relations are affected by tensions between India and Pakistan, which impact India's relations with countries in the region.
  - **Balancing geopolitics:** India's relations with Iran and the UAE's relations with China create a dynamic where geopolitical considerations can sometimes challenge the bilateral relationship between India and the UAE.
  - **Energy pricing disagreements:** As an **OPEC** country, the UAE has a different perspective on energy pricing compared to India, a major oil consumer. Disagreements over energy pricing, including India's call for a cap on prices, have led to heated exchanges between oil ministers in the past.

Way Forward:
The UAE today is India's closest partner in the Arab world and fortunately, there is enough resilience in bilateral ties to withstand the recent convulsions. It continue to forge closer partnership in these areas, building on their close and friendly relations and historical people-to-people connect. India-UAE has a strong energy partnership, which is now acquiring a new focus on renewable energy.

Source: **The Hindu**

India-France Ties

Syllabus

- **Mains – GS 2 (International Relations)**

Context: The recent visit of Prime Minister Narendra Modi to France on Bastille Day celebrations in Paris as the guest of honour coincides with 25 years of the oldest among India's almost 30 strategic partnerships around the world.

About India-France Relations:

- The two countries commenced their strategic partnership, India's first, immediately after India's nuclear tests.
- France was the first country to recognise the strategic importance of India after the nuclear tests in 1998.
- The signing of an agreement for the supply of 36 Rafale aircraft in September 2016, and an industrial agreement in March 2018 to build six **European pressurized water reactors (EPR)** at the Jaitapur site are directly linked to this partnership.

Climate agreements:

- Recently, India and France signed a Road Map on Green Hydrogen, which aims to bring the French and Indian hydrogen ecosystems together to establish a reliable and sustainable value chain for a global supply of decarbonised hydrogen.
- In 2022, they signed a Road Map on the **Blue Economy and Ocean Governance.**

Economic Cooperation

- France has emerged as a **major source of FDI for India** with more than 1,000 French establishments already present in India.
- France is the 11th largest foreign investor in India with a cumulative FDI stock of USD 9.83 billion from April 2000 to March 2021, which represents 2 % of the total FDI inflows into India.
- There are more than 150 Indian companies operating in France (including sub-subsidiaries).
- India's exports to France were valued at USD 5.6 billion, down by 22.9%.
- French exports to India decreased by 20.95% during the same period to USD 5.1 billion.
- Trade with France constitutes only 1.41% of India's total international trade.
- A joint announcement was also signed for setting up of a FAST-TRACK system for French companies in India and Indian companies in France.

Defence:

- France has emerged as a key defence partner for India, becoming the second largest defence supplier in 2017- 2021.
- France has emerged as a major strategic partner for India with crucial defence deals and increased military to military engagement.
- Induction of the French Scorpene conventional submarines, being built in India under technology transfer agreement of 2005, and the Indian Air Force having received 36 Rafale fighter jets.
- The Tata group has also tied up with Airbus to manufacture C-295 tactical transport aircraft in Vadodara, Gujarat.
- **Military Dialogues and Regularly held Joint Exercises:** Varuna (navy), Garuda (air force), and Shakti (army).

Road Map on Green Hydrogen:
- The two sides also cooperate closely on climate change initiatives.
- Recently they signed a **Road Map on Green Hydrogen,** which aims **"to bring the French and Indian hydrogen ecosystems together"** to establish a reliable and sustainable value chain for a global supply of decarbonised hydrogen.

Indo-Pacific:
- **"Joint Strategic Vision of India-France Cooperation in the Indian Ocean Region"** presents a blueprint for a strengthening of ties like Franco-Indian joint patrolling in the Indian Ocean.
- India and France agreed to set up an **Indo-Pacific Trilateral Development Cooperation** Fund that will support innovative solutions for countries in the region.
- The two partners have formed a trilateral grouping with the United Arab Emirates to ensure security from the east coast of Africa to the far Pacific.

Significance of the India France relationship:
- **Securing the Indo-Pacific**: India will require the support of France for maintaining the stability and security of the Indo-Pacific region and countering the growing Chinese aggression.
  - o The Indian Ocean holds importance for France as it controls the Reunion Islands.
  - o Both countries have concluded a **Joint Strategic Vision for cooperation** in the **Indian Ocean Region in 2018**.
- **High Degree of Trust**: France has stood by India through thick and thin, beginning with 1998 when India conducted nuclear tests.
  - o Both nations share a high degree of mutual trust that allows them to cooperate on bilateral and multilateral issues.
- **Entry to Key Organizations:** France's support will be crucial to India's entry into the UNSC and the NSG.
- **Tackling Climate Change**: The cooperation between them can be helpful to achieve the goals of the **Paris Agreement and in implementing the Glasgow Climate Pact.**
- **Global Stability:** Cooperation between the two can help in checking Russia's assertiveness in Europe and China's assertiveness in Asia, thereby ensuring global stability and world order.

Challenges:
- **Stalled Projects:** Many projects that have been negotiated between the countries have not been operationalized.
  - o For instance, the Jaitapur nuclear project has been stalled and is facing a lot of domestic impediments.

- **Free Trade with EU**: Despite having good relations, France and India don't have a free trade agreement between them.
  - o Further, no progress is being made on the **India-EU Broad based Trade and Investment agreement (BTIA)** as well.
- **Stand on Russia Ukraine conflict:** France has openly criticized the Russian invasion. India has a more restrained stance on the conflict.
  - o The difference in the response hasn't impacted their bilateral relationship till now.
  - o However if the conflict gets prolonged, then it might impact the India France relationship as well.

Way Forward:

India's partnership with France is built on common values and goals. Both have underlined the importance of maintaining strategic autonomy with a shared understanding of global risks in many domains. There is a high-level India-France political dialogue that is ongoing in defence, maritime, counterterrorism and the Indo-Pacific. In the marking of a long strategic partnership, a common interest in enhancing strategic autonomy and improving resilience, there is much ground ahead for further collaboration.

Source: **Indian Express**

A new chapter in India-Africa ties

Syllabus

- **Mains – GS 2 (International Relations)**

Context: The 20-member Africa Expert Group (AEG), established by the **Vivekananda International Foundation (VIF),** recently presented the Report entitled **'India-Africa Partnership: Achievements, Challenges and Roadmap 2023'.**

Findings of the Report:

- The VIF report notes that India has a substantive partnership with Africa and a rich fund of goodwill, but it is "**essential for India to review its Africa policy periodically, stay resilient by making the required changes, and place a razor-like focus on its implementation".**
- This can best be secured through close collaboration between the **Ministry of External Affairs and the National Security Council Secretariat** through a team of officials working under the joint leadership of the Secretary, Africa in the MEA, and a designated **Deputy National Security Adviser**.

India - Africa Relations:

Evolution of Ties:

- **Historical Ties:** India and Africa have a long history of interaction, primarily through trade routes connecting the Indian Ocean region and the East African coast.
  - o This historical connection forms the basis of cultural and people-to-people ties that continue to influence contemporary relations.
- **Decolonization and South-South Cooperation**: Following the wave of decolonization in Africa during the mid-20th century, India played a significant role in supporting African nations' struggles for independence.
  - o India's own experience of colonial rule resonated with African nations, leading to the establishment of strong diplomatic and political ties.
  - o India's leaders, such as **Mahatma Gandhi and Jawaharlal Nehru**, played a crucial role in fostering solidarity and cooperation between India and Africa.
- **Non-Aligned Movement (NAM):** Both India and many African countries were founding members of the **Non-Aligned Movement,** which emerged during the Cold War era.
  - o NAM aimed to provide a platform for countries to maintain neutrality and pursue their own development agendas, free from the influence of major power blocs.

Trade and Investment:
- India is the **fifth-biggest investor in Africa** with investments over the past 20 years amounting to $54 billion or 19.2% of Africa's foreign direct investment.
- **Pharmaceuticals, ICT and services, the automobile sector** and the **power sector** could help boost Indian trade and investment in the continent. The bilateral trade stood at $ 62 billion in 2017-18 and the goal of hitting $ 100 billion is still distant.
- A huge population of Africa can serve as an attractive destination for exports and investment under '**Make in India'**.
- Africa has ample agricultural land which can address India's food security. India is looking at leasing land in Africa to overcome the land deficit that we face in terms of arable land.

Soft Power:
- It is amplified by the **presence of Indian Diaspora** in countries like Mauritius.
  - This helps in building trust between the nations and effective implementation of joint projects.
- Women consist of 90% of Africa's labor force in the informal sector, engaged mainly in education, healthcare, and tertiary services.
- India's efforts in these areas **under the African Continental Free Trade Area (AfCFTA)** would enhance its brand image across the continent.

Common Agendas:
- Most African nations are developing in nature just like India which creates a common understanding on multiple issues.
- India and Africa share common grounds on reformation of the **UNSC, Climate change agreements, Trade Issues and WTO negotiations etc.**

Geopolitical
- India has been actively involved in peace and stability of African countries through UN Peace keeping operations. India is involved in capacity building of African countries.
- Africa, through forums such as BRICS and IBSA, can voice the concerns of developing and least developed countries at international climate change conferences and investment summits.
- **Indian aid to Africa:** India must revive the infrastructure projects already going on in Africa through its aid.
- India being a peaceful democratic nation can help African countries to establish political stability.

Regional Groupings and Forums for India-Africa Relations:
- **India-Africa Forum Summit (IAFS):** The IAFS is a major platform for India-Africa cooperation.
  - It is a summit-level meeting held periodically to enhance and strengthen the partnership between India and African countries.
- **BRICS (Brazil, Russia, India, China, South Africa):** India and Africa engage through the BRICS platform, which is a grouping of five major emerging economies.
- **Asia-Africa Growth Corridor (AAGC):** The AAGC is an economic cooperation agreement between India and Japan aimed at promoting socio-economic development in Asia and Africa.
- **International Solar Alliance (ISA):** The ISA is an initiative launched by India and France to promote solar energy deployment globally.
  - It provides a platform for collaboration and technology transfer in the field of solar energy, including for African countries.

- **India-Africa Science and Technology Initiative (IASTI)**: The IASTI is an initiative that promotes cooperation between India and African countries in the field of science and technology.

Challenges in India-Africa Relations:

- **Competition with China:** China has established a significant presence in Africa, particularly in sectors like infrastructure, mining, and energy. India faces competition from China in terms of investment, trade, and influence in Africa.
- **Limited Resources:** India's resources for providing financial assistance and infrastructure development in Africa are comparatively limited**.**
  - **India cannot match China's vast financial capabilities**, which can result in challenges in competing for major projects and trade opportunities.
- **Lack of Connectivity:** Adequate city-to-city connectivity between India and Africa is lacking, hindering people-to-people contact and impeding the growth of mutual understanding and cooperation.
- **Perception and Image:** India needs to address concerns among African citizens who view Indian investments as neo-colonialism or exploitative. Incidents of racial attacks on African nationals in India have damaged India's image and could potentially strain relations.
- **Different Priorities**: India's focus on Africa is not its primary foreign policy priority, as it also engages with other major powers like the United States, the European Union, and neighboring countries. Balancing multiple priorities can pose challenges in effectively pursuing India-Africa relations.

Way Forward:

India has a substantive partnership with Africa and a rich fund of goodwill, but it is "essential for New Delhi to review its Africa policy periodically, stay resilient by making the required changes, and place a razor-like focus on its implementation".

Source: [The Hindu](#)

Regulating Freedom of Speech on Social Media

Syllabus

- **Mains – GS 2 (Polity and Governance)**

Context: Recently, The Karnataka High Court admonished Twitter for not complying with the blocking orders by the Ministry of Electronics and Information Technology (MeitY).

About Freedom of Expression and its restrictions in India

Freedom of Expression:

- **Article 19 (a) of the Indian constitution** guarantees to every citizen of India the Freedom of speech and expression.
- It is a **[fundamental Right of the Indian Constitution](#).**

Restriction on freedom:

- However this Freedom under Article 19 is also not absolute. It faces certain **restrictions under Article 19(2), which are as follows:**
  - Matters related to the interests of the 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.

Constitutionality of the blocking orders

Information Technology Act, 2000: Section 69A of the Information Technology Act, 2000, empowers the state to issue blocking orders in cases of emergency on the grounds such as

- Sovereignty and integrity of India,
- Defence of India,
- Security of the State,
- Friendly relations with foreign States,
- Public order or
- For preventing incitement to the commission of any cognizable offence relating to the above.

The Information Technology Rules, 2009:
- The Information Technology (Procedure and Safeguards for Blocking for Access of Information by Public) Rules, 2009 (Blocking Rules) lays down the procedure for any blocking order issued under **Section 69A.**

Karnataka High Court's recent Judgement
Dismissal of Twitter's challenge:
- The Karnataka High Court dismissed Twitter's challenge to the issuance of blocking orders by the Ministry of Electronics and Information Technology (MeitY) in connection with the taking down of Twitter accounts and specific tweets.

Turn from the Shreya Singhal case:
- The Karnataka High Court has held that observations in Shreya Singhal cannot be construed to mean providing notice to the users of the content, and that even if reasons are recorded in writing, they may not be conveyed to the user.
- Additionally, the High Court held that claims of users whose tweets or accounts were blocked could not be espoused by Twitter and that none of the affected users had approached the High Court.

Concern raised over the Judgement:
- **Undermining Free Speech and Expression:** The judgment is seen as undermining the fundamental right to free speech and expression.
  - It allows the state to exercise unchecked power in taking down content on the grounds of the dissemination of false speech.
- **Lack of Procedural Safeguards**: The High Court's ruling disregards the importance of providing notice to users whose content is being blocked and fails to convey the reasons for blocking.
- **In Shreya Singhal vs Union of India**, the Supreme Court of India upheld the validity of Section 69A and the Blocking Rules after observing that sufficient procedural safeguards were embedded, such as provision of recording a reasoned order, and providing notice to the intermediary and the originator whose content was sought to be blocked.
- **Misuse of "Fake News" Rhetoric**: The High Court justified blocking orders based on the spread of "fake news" and "misinformation" threatening public order and state security.
  - However, these grounds are not valid for restricting free speech under **Article 19(2) and Section 69A.**
  - The Supreme Court has repeatedly held that there must be a direct link between the speech and the potential threat to public order.
- **Disproportionate Blocking Practices:** The High Court rejected Twitter's argument that Section 69A permits the blocking of specific tweets only.
  - Instead, it allowed wholesale blocking of Twitter accounts, constituting prior restraint on freedom of speech and expression.
  - This disproportionate blocking practice restricts future speech and has the potential to create a chilling effect on the freedom of speech of online platform users.

- **Erosion of Natural Justice:** The judgment subverts the principles of natural justice, which dictate that the affected party should be allowed to present their case to the best of their abilities.

Way Forward:

To protect freedom of speech, it is imperative to strengthen procedural safeguards in the process of blocking content to protect the freedom of speech and expression and uphold judicial precedents established to safeguard freedom of speech.

Source: [The Hindu](#)

Electric Vehicle Future

Syllabus

- **Mains –Governance**

Context: India's electric mobility plan is largely focused on **battery electric vehicles (BEVs)** replacing **internal combustion engine (ICE)** vehicles, with Li-ion seen as the most viable battery option for now.

About BEVs:

- The Electric Vehicles (EVs) that **qualify for a clear upfront tax incentive are the ones referred to as BEVs.**
- Battery Electric Vehicles or EVs are fully electric vehicles with rechargeable batteries and no gasoline engine.
- All energy to run the vehicle comes from the battery pack, which is recharged from the grid.
- BEVs are zero emissions vehicles, as they do not generate any harmful tailpipe emissions or air pollution hazards caused by traditional gasoline-powered vehicles.

India and Electric Vehicle:

- India is the **fourth highest emitter of carbon dioxide** globally and at the recently concluded COP26, it has pledged to reduce its carbon emissions to net-zero by the year 2070.
- India aims to achieve EV sales accounting for 30% of private cars, 70% of commercial vehicles, and 80% of 2 and three-wheelers by the year 2030.
- For this reason, India is aggressively promoting the adoption of EVs in the country by offering various incentives at both Central and State level, to buyers and manufacturers.
- India is among a handful of countries that support the **global EV30@30 campaign,** which aims for at **least 30% new vehicle sales to be electric by 2030.**
- India's advocacy of five elements for climate change — **"Panchamrit" — at the COP26 in Glasgow** is a commitment to the same.
- Various ideas were espoused by India at the Glasgow summit, such as, renewable energy catering to 50% of India's energy needs, reducing carbon emission by **1 billion tonnes by 2030 and achieving net zero by 2070.**
- The government of India remodeled **Faster Adoption and Manufacturing of Electric Vehicles (FAME II) scheme.**
- The recently launched [**Production-Linked Incentive (PLI) scheme** for **Advanced Chemistry Cell (ACC)**](#) for the supplier side.
- The recently launched PLI scheme for Auto and Automotive Components for manufacturers of electric vehicles.

Advantages of Electric Vehicles in India:

- **Low cost of ownership:** It is a proven fact by many researches that EVs offer way lower cost of ownership in their lifecycle compared to fossil fuel powered vehicles.
    - At times, the cost of ownership for an EV is as lower as 27% than a fossil fuel vehicle.

- o The incessant rise of petrol and diesel costs are increasing the cost of ownership further for the conventional vehicles.
- **Easier to maintenance:** An internal combustion engine usually contains more than 2,000 moving parts.
  - o An electric motor onboard an EV on the other hand contain around 20 moving parts.
  - o The only major components in an EV are the battery and the electric motor.
  - o This makes the EVs much easier for maintenance, reducing the cost of ownership significantly.
- **State EV policies**: Several state governments across India have already announced their respective EV policies.
  - o Some of them promote the supply side, while some promote the demand side.
  - o There are EV policies that promote both the supply and demand side through incentives, discounts and other benefits.
- **Cleaner environment**: The direct and obvious advantage of adopting electric mobility is the cleaner environment.
  - o Electric vehicles do not emit pollutants into the air like their ICE counterparts.
  - o The EVs are silent as well unlike their ICE counterparts.
  - o This means EVs ensure a cleaner and quieter environment.

Challenges associated with electric vehicles in India:
- **High initial cost:** The upfront cost of EVs is still higher than traditional gasoline-powered vehicles, making it difficult for many consumers to afford them.
- **Limited charging infrastructure:** The lack of charging infrastructure makes it difficult for EV owners to travel long distances.
- **Battery technology:** The current battery technology still has some limitations, such as limited driving range and long charging time.
- **Limited domestic manufacturing capabilities:** India currently lacks the domestic manufacturing capabilities for electric vehicle components and batteries, making it dependent on imports.
- **Lack of awareness:** There is still a lack of awareness about the benefits of EVs among the public in India.
- **Limited Government initiatives:** The Indian Government has set ambitious goals for the adoption of electric vehicles, but the lack of concrete action plans and initiatives has been a hindrance.
- **Lack of standardization:** The lack of standardization in charging infrastructure and lack of uniformity in regulations across states and union territories is a challenge.
- **Power Grid infrastructure**: India's power grid infrastructure is not fully developed and is not capable of handling the high-power demand of EV charging stations.

Government initiatives to promote EV adoption:
- **The Faster Adoption and Manufacturing of Electric Vehicles (FAME)scheme II**, which provides incentives for EV manufacturers and buyers. These incentives include subsidies, tax rebates, preferential financing, and exemptions from road tax and registration fees.
- **The National Electric Mobility Mission Plan (NEMMP),** which sets out the target to achieve 6-7 million sales of hybrid and electric vehicles year on year from 2020 onwards by providing fiscal incentives.
- **The National Mission on Transformative Mobility and Battery Storage,** which seeks to create a comprehensive ecosystem for the adoption of EVs and support the establishment of giga-scale battery manufacturing plants in India.
- **The Production Linked Incentive (PLI) scheme**, which provides incentives for the manufacturing of electric vehicles and components.

- **The Vehicle Scrappage Policy,** which provides incentives for the scrapping of old vehicles and the purchase of new electric vehicles.
- **The Go Electric campaign** aims to create awareness on the benefits of EVs and EV charging infrastructure.
- India is among a handful of countries that support the **global EV30@30 campaign,** which aims for at least 30% new vehicle sales to be electric by 2030.

For the good or bad, India is establishing itself as a global leader in EV manufacturing. Electric vehicles are expected to accommodate higher renewable energy penetration while strengthening and stabilizing grid operation.

Source: **Indian Express**

GS PAPER-3

Forest (Conservation) Amendment Bill, 2023

Syllabus
- **Mains –GS 3 (Environment)**

Context: A parliamentary committee, set up to examine the controversial proposed amendments to the **Forest (Conservation) Act, 1980**, has endorsed the amendment Bill in its entirety.

About Forest cover in India:
- Forest cover', in India, refers to **land greater than one hectare in size where the tree canopy density is greater than 10%.**
- India's total forest cover rose to **38,251 sq. km from 2001 to 2021.**
- This increase was mainly in terms of open forest cover, where tree canopy density ranges from **10% to 40%.**
- Forest cover in regions classified as '**dense forest' actually decreased during that period.**
- The amendments, which encourage plantation cultivation, may increase tree cover, but will be unable to stem the loss of dense forests.

Key Features of the Forest (Conservation) Amendment Bill, 2023:

Land under the Purview of the Act: The Bill provides that two types of land will be under the purview of the Act:
- land declared/notified as a forest under the **Indian Forest Act, 1927** or under any other law, or
- Land not covered in the first category but notified as a forest on or after October 25, 1980 in a government record.

Exempted Categories of Land;
- The Bill exempts certain types of land from the provisions of the Act, such as forestland along a rail line or a public road maintained by the government.

Assignment/Leasing of Foreign Land
- Under the Act, a state government requires prior approval of the central government to assign forestland to any entity not owned or controlled by government.
- In the Bill, this condition is extended to all entities, including those owned and controlled by government.
- It also requires that prior approval be subject to terms and conditions prescribed by the central government.

Permitted Activities in Forest Land:
- The Act restricts the de-reservation of forests or **use of forestland for non-forest purposes.**
  - Such restrictions may be lifted with the **prior approval of the central government.**
- Non-forest purposes include use of land for cultivating horticultural crops or for any purpose other than reforestation.

- The Act specifies certain activities that will be excluded from non-forest purposes, meaning that restrictions on the use of forestland for non-forest purposes will not apply.

The Bill adds more activities to this list such as:

- zoos and safaris under the **Wild Life (Protection) Act, 1972** owned by the government or any authority, in forest areas other than protected areas,
  - ecotourism facilities,
  - silvicultural operations (enhancing forest growth), and
  - Any other purpose specified by the central government.

Power to Issue Directions:

- The Bill adds that the central government may issue directions for the implementation of the Act to any authority/organisation under or recognized by the centre, state, or union territory (UT).

Controversial parts of the Amendment

- **Dilution Concerns:** Some critics argue that the amendments dilute the **Supreme Court's 1996 Godavarman case judgment**, which extended protection to forests not officially classified as such.
- **Geographically Sensitive Areas**: Projects within 100 km of international borders or the Line of Control would no longer require forest clearance, which raises concerns about the environment and security.
- **Deemed Forests and Tourism**: Central protection for deemed forests and restrictions on activities like tourism could be compromised, affecting biodiversity conservation and forest integrity.
- **Impact on Forest Cover:** Exempting land near border areas for national security projects may adversely affect forest cover and wildlife in northeastern states, which have high forest cover and are biodiversity hotspots.
- **Potential Adverse Effects**: Blanket exemptions for projects like zoos, eco-tourism facilities, and reconnaissance surveys may have negative consequences for forest land and wildlife.

Way Forward:

The Forest (Conservation) Amendment Bill, despite attracting objections and controversies, has received the endorsement of the parliamentary committee. The proposed amendments aim to bring clarity to the Act's applicability and promote tree cover, national security infrastructure, and livelihood opportunities.

Source: **The Hindu**

Circular Economy

Syllabus

- **Mains – GS 3 (Economy)**

Context: **Resource Efficiency Circular Economy Industry Coalition** (RECEIC) was recently launched on the side-lines of the fourth G-20 Environment and Climate Sustainability Working Group (ECSWG) and Environment and Climate Ministers' meeting.

About Circular Economy:

- A Circular Economy is the **one where products are designed for durability, reuse and recyclability** and thus almost everything is reused, remanufactured, and recycled into a raw material or used as a source of energy.
- It **includes 6 R's** - Reduce, Reuse, Recycle, Refurbishment, Recover, and Repairing of materials.

Need for Circular Economy:

- CE focuses on **minimising waste** while maximising utilisation and calls for a production model aiming to retain the most value to create a system that promotes sustainability, longevity, reuse, and recycling.
- Though India has always had a **culture of recycle and reuse**, its rapid economic growth, growing population, impact of climate change and rising environmental pollution, the adoption of a circular economy is more imperative now.
- CE can lead to the **emergence of more sustainable production and consumption patterns,** thus providing opportunities for developed and developing countries to achieve economic growth and inclusive and **sustainable industrial development** (ISID) in line with the **2030 Agenda for Sustainable Development.**

Significance of Circular Economy:

- **Protection of the environment:** Circular economy benefits the environment by consuming fewer natural resources, and thus reduces ecological footprint.
    - It helps lower the emissions and produces less polluting waste.
    - It helps in preservation of biodiversity, as there is less pressure on natural resources like forests.
- **Benefits for the local economy**: There is emphasis on promoting production models that rely on reuse of nearby waste as raw material.
- **Drives employment growth:** Circular Economy fosters the development of a new, more inventive, and competitive industrial model, resulting in higher economic growth and more employment opportunities.
- **Promotes resource independence:** Reusing local resources can reduce reliance on imported raw materials.
    - It can help in achieving self-sufficiency.
- **Enhanced Food Security:** The circular bio economy can contribute to improved food security by using agricultural residues and waste as feedstock for bio-based products instead of diverting them from food production.

Challenges of the Circular Economy:

- **Infrastructure and Technology:** Developing and upgrading recycling and waste management infrastructure, as well as adopting advanced technologies for resource recovery, can be a major challenge.
- **Behavioural Change:** Encouraging a shift in consumer behaviour towards responsible consumption, product reuse, and recycling requires effective communication and behavioural change campaigns.
- **Regulatory Framework**: Ensuring effective and harmonized policies, regulations, and incentives to support circular economy practices across different sectors is challenging.
- **Financial Investment:** Circular economy projects often require significant upfront investments.
    - Attracting private and public investment to fund these initiatives can be challenging.

Government Initiatives to promote CE

- **E-Waste Management Policy:** Electrical and electronic waste, including both whole and unfinished discarded equipment from their manufacture and repair processes, is referred to as "e-waste" and "electrical and electronic equipment.
- **Plastic Waste Management (Second Amendment) Rules, 2022:** The Union Environment Ministry has launched this policy to mandate to increase in the thickness of plastic carry bags to over 120 microns and the phase-out of some single-use plastic products.

- **Swachh Bharat Mission** - **Urban 2.0 (SBM-U2.0):** It aims to achieve the objective of safe sanitation in urban areas by making all cities **"Garbage Free,"** guaranteeing grey and black water management in all cities.
    - It also aims at making all urban local bodies **open defecation free (ODF+) and those with a population of less than 1 lakh as ODF++.**
- In order to effectively manage solid waste, the mission will concentrate on source segregation of trash, using **the 3Rs (reduce, reuse, recycle)** as a guideline, scientific processing of all sorts of municipal solid waste, and repair of former dumpsites.
- **City Investments to Innovate, Integrate and Sustain (CITIIS) 2.0:** The Government launched the City Investments to Innovate, Integrate and Sustain (CITIIS) 2.0 to promote circular economy in 18 smart cities to be selected through a competition.
    - The total funding for the scheme will come from loans and a grant of Rs. 106 crore from the European Union.
    - The programme starts this year and will run until 2027, with the support of the **National Institute of Urban Affairs.**

Way Forward:

India's G-20 presidency has placed resource efficiency and circular economy at the centre of the global sustainability agenda. The **'reduce-reuse-recycle' model and circular economy strategies** are essential in minimizing environmental impact and decoupling resource utilization from economic growth. Through its focus on circularity in the steel sector, **Extended Producer Responsibility (EPR), circular bio economy, and an industry-led coalition**, India aims to drive the transition towards a more sustainable and resilient future.

Source: **The Hindu**

Synthetic Biology

Syllabus

- **Mains – GS 3 (Science and Technology)**

Context: A new field of science has been emerging called **synthetic biology**.

About Synthetic Biology:
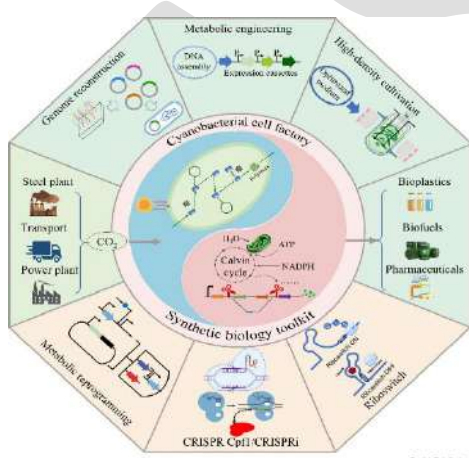
- Synthetic biology refers to the **science of using genetic sequencing, editing, and modification to create unnatural organisms or organic molecules** that can function in living systems.
- Synthetic biology enables scientists to design and synthesize new sequences of DNA from scratch.
- The term 'synthetic biology' was first used by **Barbara Hobomin in 1980**, to describe bacteria that had been genetically engineered using **recombinant DNA technology**.
- Synthetic biology was initially synonymous with 'bioengineering'.
- In 2000, the term '**synthetic biology'** was again introduced by Eric Kool and other speakers at the annual meeting of the American Chemical Society in San Francisco.

Applications of Synthetic Biology:

- **Standardised Biological Parts**: identify and categorize standardized genomic parts that can be used (and synthesized quickly) to build new biological systems.

- **Applied Protein Design**: Redesign existing biological parts and expand the set of natural protein functions for new processes.
  - o For e.g., **Modified rice to produce beta-carotene** (a nutrient usually associated with carrots), that prevents Vitamin A deficiency.
- **Natural Product Synthesis**: Engineer microbes to produce all of the necessary enzymes and biological functions to perform complex multistep production of natural products.
  - o For e.g., **Microorganisms harnessed for bioremediation** (use of living microorganisms to degrade environmental contaminants into less toxic forms) to clean pollutants from water, soil and air.
- **Synthetic Genomics**: Design and construct a 'simple' genome for a natural bacterium.
  - o For e.g., **Yeast engineered to produce rose oil** as an eco-friendly and sustainable substitute for real roses that perfumers use to make luxury scents.

Concerns related to the synthetic biology
Economic concerns:
- It can create a huge surge in the economy causing a shift towards biotechnology-based economies.
- This will mostly affect the rural economy and low-income tropical countries.
- Natural products are usually grown and harvested in low-income countries and this could be displaced by advancements in synthetic biology.

Environmental concerns:
- When a new species is created or when a species is intensely modified, the activity of species and their coexistence with other organisms is mostly unpredictable.

Ethical Concerns:
- The scientists would go in and edit the genes of human embryos, removing genetic material that codes for harmful or fatal diseases, creating genetically modified humans, and genetically engineering humans could accidentally give rise to new social inequalities.

Regulation:
- Robust and independent regulation is key; the public did not trust a voluntary or self-regulation system.
- International co-ordination and regulation to control technology development in global markets is a major challenge.

Indian regulatory system related to synthetic biology:
- Drugs and Cosmetics Rules – 1988,
- **Protection of Plant Varieties and Farmers' Rights Act, 2001,**
- **Biological Diversity Act, 2002**
- **Food Safety and Standards Act 2006**

Way Forward:
Synthetic Biology offers innovative approaches for engineering new biological systems or re-designing existing ones for useful purposes. To achieve the **UN Sustainable Development Goals**, there is a need to think innovatively and synthetic biology could full fill the SDG target. The need of the hour is to ecological balance and cut down pollution and plastic waste from our industrial processes and day-to-day activities.
Source: **The Hindu**

The 'free movement regime' along the India-Myanmar border

Syllabus
- **Mains – GS 3 (Security Issues)**

Context: Amid tensions in Manipur, questions have been raised on the Free Movement Regime (FMR) that facilitates migration across the Indo-Myanmar Border (IMB).

About the Free Movement Regime

- The border between India and Myanmar runs for 1,643 km in the four states of **Mizoram, Manipur, Nagaland, and Arunachal Pradesh.**
- The FMR is a mutually agreed arrangement between the two countries that allows tribes living along the border on either side to travel up to 16 km inside the other country without a visa.
- The FMR was implemented in 2018.

Significance of FMR:

- The agreement will **facilitate movement of people** on basis of valid passports and visas, which will enhance economic and social interaction between two countries.
- It will facilitate **regulation and harmonization of already existing free movement rights** for people ordinarily residing in border areas of both countries.
- It will also give **boost to economy of North East** and leverage geographical connections with Myanmar to boost trade and people-to-people ties.
- It will also **safeguard traditional rights of largely tribal communities** residing along border, which are accustomed, to free movement across land border.

Challenges:

Insurgency and drug trafficking:

- A number of insurgent groups have built camps in nearby regions.
- According to the Centre for Land Warfare Studies (CLAWS), a number of insurgent groups such as the **United National Liberation Front (UNLF), People's Liberation Army (PLA), the United Liberation Front of Assam (ULFA), National Socialist Council of Nagaland (NSCN),** and small groups of Kukis and Zomis have built camps in Sagaing Division, Kachin State and Chin State in Myanmar.
- They took shelter there, obtained arms, trained cadres and engaged in illegal activities such as smuggling drugs and selling weapons to raise funds.
- This is possible because of the porous borders and frequent misuse of FMR.
  - o Therefore, managing and administering the border areas effectively is pertinent for reducing drug trafficking and illegal cross-border movement on unfenced borders," the paper said.
    (Revisiting Free Movement Regime (FMR): Challenges and Implications, November 2022)

Suggestive measures: Way Forward

- The focus should be on **revising FMR and transforming informal** to formal trade by focusing on infrastructural development, regulatory mechanisms.
- **Designated multiple entry points**, within reasonable distance along the India-Myanmar Border, and strict vigilance by deploying the border guards as per requirement, must be initiated.
  - o Through these designated entry points, people should be strictly informed to use the designated point for going and coming across the border.
- **Deployment of manpower 24/7** and increasing their number, is a must to check the frequency of traders' movement, locals and people with local head loads.

- **Strict checking or frisking of women** should be done in a separate compartment, especially for women by deploying more women in uniform.
- **Strict vigilance at entry points by deploying sufficient security guards**. Selective fencing in specific regions is required.
- It is imperative that **India strengthens the security of the border** and redoubles its efforts to meaningfully engage Myanmar to effectively manage this border.
- To begin with, it should give **the Assam Rifles the sole responsibility of guarding the India-Myanmar border** and strengthen it with adequate manpower and equipment.
  - o At the same time, through sustained community interaction programmes, the border community should be sensitised to participate in the nation-building project.

Source: **Indian Express**

Quantum technology & National Security

Syllabus

- **Mains – GS 3 (Science and Technology)**

Context: India must develop its quantum technologies soon, not just to solve the domestic issues but also to guard the nation from foreign security threats.

About Quantum Technology:

- It is based on the **principles of Quantum mechanics** developed in the early 20th century to describe nature at the scale of atoms and elementary particles.
- Scientists have expanded quantum theory to understand biological phenomena such as smell, consciousness, enzyme catalysis, photosynthesis, avian navigation like that of the Robin, origin of life and effects on coronavirus.
- The **Nobel Prize in Physics 2022** was awarded jointly to **Alain Aspect, John F. Clauser and Anton Zeilinger** for experiments with entangled photons, establishing the **violation of Bell inequalities and pioneering quantum information science.**
- It recognizes the groundbreaking work of these three physicists, who have demonstrated the power of entanglement to revolutionize our understanding of the universe.

Significance of Quantum Technologies:

- **Electronics:** Many modern electronic devices are designed using quantum mechanics.
  - o Examples include the laser, the transistor (and thus the microchip), the **electron microscope, and magnetic resonance imaging (MRI).**
- **Cryptography:** Researchers are currently seeking robust methods of directly manipulating quantum states.
  - o Efforts are being made to develop quantum cryptography, which will theoretically allow guaranteed secure transmission of information.
- **Quantum computing:** Another goal is the development of quantum computers, which are expected to perform certain computational tasks exponentially faster than classical computers.
  - o Instead of using classical bits, quantum computers use qubits, which can be in superpositions of states.
  - o Quantum programmers can manipulate the superposition of qubits in order to solve problems that classical computing cannot do effectively, such as searching unsorted databases or integer factorization.
- **Quantum technology** is opening up new frontiers in **computing, communications, cyber security** with widespread applications.

o It is expected that many commercial applications would emerge from theoretical constructs, which are developing in this area.
- **Disaster Management**: Tsunamis, drought, earthquakes and floods may become more predictable with quantum applications.
- **Research**: It can help in solving some of the fundamental questions in physics related to gravity, black hole etc.
  o Similarly, the quantum initiative could give a big boost to the **Genome India project, a collaborative effort of 20 institutions** to enable new efficiencies in life sciences, agriculture and medicine.

National Mission on Quantum Technologies and Applications (NMQTA):
- The Department of Science and Technology (DST) under the Ministry of Science and Technology will implement it**.**
- The mission planned for 2023-2031 aims to seed, nurture, and scale up scientific and industrial R and D and create a vibrant and innovative ecosystem in Quantum Technology (QT).
- With the launch of this mission, India will be the seventh country to have a dedicated quantum mission after the **US, Austria, Finland, France, Canada and China.**
- **Four Thematic Hubs (T-Hubs)** will be set up in top academic and National R&D institutes on the domains -
  o **Quantum Computing,**
  o **Quantum Communication,**
  o **Quantum Sensing and Metrology, and**
  o **Quantum Materials and Devices.**
- The hubs will focus on the generation of new knowledge through basic and applied research as well as promote R&D in areas that are mandated to them.

Salient features of NQM:
- It will target developing intermediate scale quantum computers with **50-100 physical qubits in 5 years and 50-1000 physical qubits in 8 years.**
- Just like bits (1 and 0) are the basic units by which computers process information, '**qubits' or 'quantum bits'** are the units of process by quantum computers.
- The mission will help develop magnetometers with high sensitivity for **precision timing (atomic clocks), communications, and navigation.**
- It will also support design and synthesis of quantum materials such as superconductors, novel semiconductor structures and topological materials for fabrication of quantum devices.

Challenges
- **Slow Progress in Legislative Procedures:** Although the NM-QTA was announced in the 2020 Budget speech, the mission has still not received any approval and no funds were allocated, disbursed or utilized under **NM-QTA during the FY 2020-21.**
- **Limited Private Sector Involvement in NM-QTA:** The Union Minister of Science & Technology has also claimed that for the NM-QTA, no private sector partners had been identified yet and no one from outside the government had been tapped for consultations for the national mission.
  o The government must recognize the leaps made by these companies.
- **Security related issues**: Quantum computing can have a disruptive effect on cryptographic encryption, which secures communications and computers.

- o It might pose a challenge for the government also because if this technology goes into the wrong hands, all the government's official and confidential data will be at risk of being hacked and misused.
    - **Technological Issues:** The challenge lies in harnessing the properties of quantum superposition in a highly controlled manner. The qubits tend to be very fragile and lose their **"quantumness"** if not controlled properly.

Way Forward:

The National Quantum Mission's focus on quantum materials and devices marks a significant step towards India's technological advancements. Through strategic investments, collaborative research, and an efficient R and D ecosystem, India can harness the power of quantum technology, propel innovation, and achieve self-reliance across multiple sectors.

Source: **The Hindu**

India's Creative Economy

Syllabus

- **Mains – GS 3 (Economy)**

Context: The creative economy is one of the youngest and fastest-growing sectors in India.

About Creative Economy:

- It is an evolving concept, which is **building on the interplay between human creativity and ideas and intellectual property, knowledge and technology.**
- It includes advertising, architecture, **arts and crafts, design, fashion, film, video, photography, music, etc.**

Status of India's creative economy:

Growing recognition:

- There is now growing recognition of the economic importance of the arts sector as it helps in the creation of jobs, economic growth, tourism, exports, and overall societal development.
- Digital platforms and technology have enabled Indian artists and artisans to reach wider audiences.
- Online platforms, social media, and digital content creation enable artists, writers, film-makers, musicians, and other creatives to engage with audiences, and monetize their talents.
- Indian artists and artisans play a vital role in preserving traditional art forms and creating contemporary artworks.

UNESCO MONDIACULT 2022:

- Recognizing the economic importance of culture, **the UNESCO World Conference on Cultural Policies and Sustainable Development (MONDIACULT 2022)** was held to address contemporary issues in multicultural societies.
- The goal was to share a vision for the future of cultural policies and to reaffirm the international community's commitment to leveraging culture's transformative power for sustainable development.

Challenges faced by Indian artistes:

- **Economic and market challenges**: Indian artists struggle with issues related to economic sustainability and gaining adequate market access to monetize their work.
- **Preservation of traditional art forms:** In the face of rapidly changing societal trends, preserving and promoting traditional art forms presents significant challenges.
- **Inequalities in representation and support:** Artists often face a lack of transparency in the selection process for financial assistance and event organization. Those based outside cities are particularly disadvantaged.

- **Crime in the art world:** Artists must contend with art-related crimes such as theft, forgery, and illicit trafficking. These crimes undermine cultural heritage, financial security, and public trust.

To address these challenges, the article suggests several solutions:

- **Government Support and Cultural Institutions:** Continued financial assistance, training programs, and opportunities provided by the government and cultural institutions can help artists sustain themselves and gain exposure.
- **Transparent Selection Processes:** Implementing transparent and fair selection processes for financial assistance and cultural events can ensure equal representation and opportunities for artists.
- **Promotion of Artists as Brands:** Private and public institutions should take initiatives to promote contemporary artists as brands, providing market support, research, business facilitation, and platforms to showcase their work.
- **Enhanced Security Measures and Technology:** Strengthening security measures, promoting international cooperation, raising public awareness, and utilizing advanced technology for authentication and tracking can help combat crime in the art world.
- **Preservation of Cultural Heritage:** Regular audits, verified identification marks, and institutional records can contribute to preserving the integrity and trust of cultural collections.

Way Forward:

The economic and cultural significance of art, culture, and the creative economy in India, while addressing challenges and proposing solutions, should support the growth and development of artists and artisans as a whole.

Source: The Hindu

A big step in reducing the risk of disasters

Syllabus

- **Mains – GS 3 (Disaster Management)**

Context: The world needs to do more to prevent the risk of losses from all disasters, whether they are weather-related, earthquakes, or biological ones like COVID-19.

About a Disaster:

- A disaster refers to a significant disturbance in the normal functioning of a community, leading to human, material, economic, and environmental damages that surpass the community's capacity to manage.
- It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.

Classification of Disasters

On the Basis of Source

- **Natural Disasters**: They are caused by natural phenomena (meteorological, geological or even biological origin).
  - Examples of natural disasters are cyclones, tsunamis, earthquakes and volcanic eruptions, which are exclusively of natural origin.
  - Landslides, floods, drought, fires are socio-natural disasters since their causes are both natural and manmade.
- **Anthropogenic Disasters:** They occur due to human intervention or negligence.
  - These are associated with industries or energy generation facilities and include explosions, leakage of toxic waste, pollution, dam failure, wars or civil strife etc.

On the Basis of Duration

- Rapid Onset Disasters: They are characterised by the sudden and acute intensity of the impact during a short period.

- o Earthquakes, cyclones, floods, tsunamis would fall under the category of rapid onset disasters.
- **Slow Onset Disasters:** Also termed as 'Creeping Emergencies', can be predicted much further in advance and unfold over months or even years.
    - o Climate change (global warming), desertification, soil degradation, and droughts, would fall under the category of slow onset disasters.

Disasters around the world
- Disasters around the world are claiming more and more lives. The consequences of climate change are already on our doorstep.
- Recently, three continents were gripped by heat waves.
- Massive forest fires have ravaged parts of Greece and Canada.
- Two weeks ago, the **river Yamuna** breached the highest flood level, recorded 45 years ago, and inundated parts of Delhi.

Sendai Framework 2015-2030
- The Sendai Framework works hand in hand with the other 2030 Agenda agreements, including **the Paris Agreement on Climate Change**, T**he Addis Ababa Action Agenda on Financing for Development, the New Urban Agenda, and ultimately the SDGs.**
- It was endorsed by the **UN General Assembly** following the 2015 Third **UN World Conference on Disaster Risk Reduction (WCDRR)**.
- It advocates for the substantial reduction of disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries.
- State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector, and other stakeholders.

Challenges to Disaster Risk Reduction Mechanism
- The lack of competent financial risk management and insurance has provided a fertile breeding ground for these risks to proliferate and intensify.
- There is also a scarcity of investment in a development-oriented approach that unites all parties into a transparent framework of action at the national level.
- Significant difficulty in collecting and analysing data on hazards and exposures.
- The lack of technical and institutional capacity for risk assessment and modelling.
- Achieving comprehensive coverage of disaster risks.

Impacts of Disaster:
- **Loss of Economy and Infrastructure**: Disaster results in huge economic loss due to destruction of property, human settlements etc.
- **Loss of Biodiversity:** Disaster can change the natural environment, loss of habitat to many plants and animals and cause ecological stress that can result in biodiversity loss.
- **Scarcity of basic necessities**: Post- disasters, food, water and other natural resources become scarce resulting in food and water scarcity.
- **Increase in Inequality:** The disaster results in displacement of people and displaced populations often face several challenges in new settlements, in this process, they become poorer.
- **Psychological Impact:** Disaster increases the level of vulnerability and affects psychologically too.

Disaster Management in India
- National Disaster Management Authority (NDMA)

- **National Disaster Response Force** (NDRF)

Initiatives by India

Coalition for Disaster Resilient Infrastructure (CDRI):

- Coalition for Disaster Resilient Infrastructure (CDRI) was first proposed by India during the 2016 Asian Ministerial Conference on Disaster Risk Reduction held in New Delhi.
- India is taking the lead and offering the expertise of Disaster Resilient Infrastructure (DRI) to its friendly countries.

Humanitarian Aid and Disaster Relief (HADR) operations:

- Indian defence forces, under the aegis of Headquarters **Integrated Defence Staff (HQ IDS)** have been carrying out HADR operations within the country as well as outside the country to deepen coordination with its neighbours and friendly countries with a focus on sharing expertise and building capabilities.

India's initiative at G20 - Disaster Risk Reduction Working Group:

- India has established the first G20 Disaster Risk Reduction Working Group.
- Countries that make up the G20 hold around 85% of the global GDP and about two-thirds of the world population.
- As human vulnerability to disasters is strongly linked to economic decisions, the G20 is in a unique position to chart a new path of disaster risk-informed decision-making.

Way Forward:

- **Early Warning System:** There is a need to work on receiving early warnings as much as possible, which helps in mitigating the disasters.
- **High Budget Allocation:** High allocation of budget and resources are necessary to take mitigating actions and after-effect actions.
- **Resilient Infrastructure**: It should be focused on to prevent extreme situations.
- **Transparency**: Transparency mechanisms should include transparency boards, clearly mentioning the cost, quality and quantity of relief items, social audits and citizens' reports.
- **Awareness and Knowledge**: Awareness is the best practice that can prevent and reduce the impact of disasters. Traditional and modern knowledge both should be spread and implied to mitigate the impacts of disasters.
  - o Example: The tribal communities in India adopt low-cost traditional technologies that help them mitigate the impact of natural disasters like drought.

Source: **The Hindu**

Gig workers and gig economy

Syllabus

- **Mains – GS 3 (Economy)**

Context: Recently the Rajasthan government passed the **Rajasthan Platform Based Gig Workers (Registration and Welfare) Bill, 2023.**

Highlights of the bill:

- **Registration of a gig worker**: The Bill states any person has the right to be registered the minute they join an app-based platform, regardless of the duration of work or how many providers they work for.

The Bill applies to:

- **"Aggregators"** (digital intermediaries connecting buyers and sellers) and "Primary employers" (individual or organisations engaging platform-based workers).
- **Welfare Board:** The Bill proposes a Welfare Board comprising State officials, five representatives each from gig workers and aggregators, and two others from civil society.

- o The Board will set up a welfare fund, register platform-based gig workers, aggregators and primary employers, facilitate guarantee of social security to platform-based gig workers and to provide for matters connected therewith or incidental thereto.
- o The Board will maintain a database of companies and workers and each worker will receive a unique ID, which "shall be valid in perpetuity.
- **Social Security and Welfare Fund:** According to the Bill, the Board will create a **"Social Security and Welfare Fund".**
  - o The fund will comprise of contributions made by individual workers, State government aids, other sources and a **'welfare cess'** — a cut from each transaction — which the aggregator is required to pay.
- **Grievance redressal**: Gig workers "have an opportunity to be heard for any grievances" with "entitlements, payments and benefits provided under the Act."
  - o As per the bill, a worker can file a petition physically before an officer or online through the web portal.
  - o The employer can object to the order within 90 days before an 'Appellate Authority'.

Gig Economy in India:

- The gig economy is about individual workers carrying out tasks for clients through the intermediation of a platform attributing those tasks and taking care of the transfer of payment on a task-by-task basis.
- In 2020, 7.7 million workers were engaged in the gig economy.
- The gig workforce is expected to expand to 23.5 million workers by 2029-30.
- At present about 47% of the gig, work is in medium skilled jobs, about 22% in high skilled and about 31% in low skilled jobs.
- Trend shows the concentration of workers in medium skills is gradually declining and that of the low skilled and high skilled is increasing.
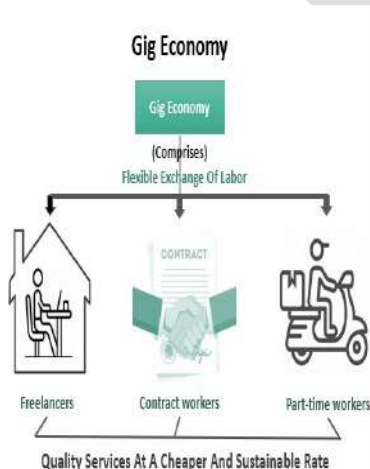
Gig workers:
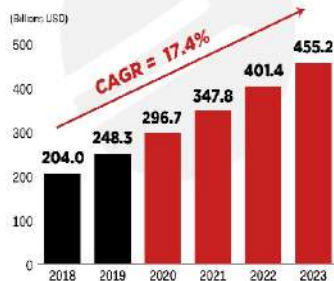
- **NITI Aayog** defines 'gig workers' as those engaged in work outside of the traditional employer-employee arrangement.
- NITI Aayog's report titled '**India's Booming Gig and Platform Economy'** defines a gig worker as "**someone who engages in income-earning activities outside of a traditional employer-employee relationship, as well as in the informal sector".**
- Additionally, it defines those working with platforms such as Ola, Uber, Dunzo, Swiggy, Zomato and Urban Company as platform workers.

Challenges faced by gig workers:
- **Hurdle in growth of full time employee:** While not all employers are inclined to hire contracted employees, the gig economy trend can make it harder for full-time employees to develop in their careers since temporary employees are often cheaper to hire and more flexible in their availability.

- **Work-life balance:** For some workers, the flexibility of working gigs can actually disrupt the work-life balance, sleep patterns, and activities of daily life
- **Can replace Full time employees:** The number of full-time employees required by the company can be reduced as freelance workers take over the work.
- **No job security:** In effect, workers in a gig economy are more like entrepreneurs than traditional workers. While this may mean greater freedom of choice for the individual worker, it also means that the security of a steady job with regular pay and benefits.
- **No regular job benefits:** Many employers save money by avoiding paying benefits such as health coverage and paid vacation time.
  - Because there is no formal employment relationship with the platform company, there are usually no employee benefits in short-term contracts, which are less guaranteed than full-time and part-time jobs, and are difficult to write on resumes.

Steps Taken by Government of India for Gig Workers:

- **Code of Social Security, 2020**: The Government has formulated the Code on Social Security, 2020 that envisages framing of suitable social security schemes for gig workers and platform workers on matters relating to life and disability cover, accident insurance, health and maternity benefits, old age protection, etc. However, these provisions under the Code have not come into force.
- **Platform workers** are those whose work is based on online software apps or digital platforms. Non-platform gig workers are generally casual wageworkers and own-account workers in the conventional sectors, working part-time or full time.
- **e-Shram Portal:** The Government has also launched e-Shram portal in 2021 for registration and creation of a Comprehensive National Database of Unorganized Workers including gig workers and platform workers.
  - It allows a person to register himself or herself on the portal on a self-declaration basis, which is spread across around 400 occupations.

Way Forward:
Gig Economy has the potential to create jobs for India's large workforce, especially the low-skilled workers. The Government must take appropriate steps to support the expansion of gig economy and platforms. At the same time, the interests of the gig workers must be protected to provide them with just work conditions as well as social security benefits. Achieving the balance will need some effort from all stakeholders.

Source: **Indian Express**

Indian Space Policy 2023

Syllabus
- **Mains – GS 3 (Science and Technology)**

Context: Hailing its ambitious space programme, India is currently home to about 140-registered space-tech start-ups, "stands to transform the planet's connection to the final frontier" and can emerge as a "counterweight" to China.

India's Space Economy

- Today, while **ISRO's budget is approximately $1.6 billion**, India's space economy is over $9.6 billion.
- Broadband, **OTT** and **5G** promise a double-digit annual growth in satellite-based services.
- With an enabling environment, the Indian space industry could **grow to $60 billion by 2030, directly creating more than two lakh jobs.**

About Indian Space Policy:
- In April 2023, the **Union Cabinet approved the Indian Space Policy 2023.**
- The Policy seeks to institutionalize the private sector participation in the space sector and give a larger participation to research, academia, startups, and industry. It also delineated the roles and responsibilities of **ISRO, space sector PSU NewSpace India Limited (NSIL) and Indian National Space Promotion and Authorization Centre (IN-SPACe).**

Major highlights of the policy:
- The policy creates four distinct, but related entities, that will facilitate greater private sector participation in activities that have usually been the traditional domain of the ISRO.
- **Indian National Space Promotion and Authorisation Centre (InSPACe):** It will be a single window clearance and authorisation agency for space launches, establishing launch pads, buying and selling satellites, and disseminating high-resolution data among other things.
  - It will also share technologies, products, processes and best practices with NGEs (non-government entities and this will include private companies) and government companies.
- **New Space India Limited (NSIL):** It will be responsible for commercializing space technologies and platforms created through public expenditure, as well as, manufacturing, leasing, or procuring space components, technologies, platforms and other assets from the private or public sector.
- **Department of Space:** It will provide overall policy guidelines and be the nodal department for implementing space technologies and, among other things, co-ordinate international cooperation and coordination in the area of global space governance and programmes in consultation with the Ministry of External Affairs.
  - It will also create an appropriate mechanism to resolve disputes arising out of space activity.

Advantages of the Indian Space Policy 2023:
- **Provides clarity:** The Indian Space Policy 2023 establishes a single regulatory body, IN-SPACe, to streamline the process and provide clarity to all involved parties.
- **Fostering innovation:** The Indian Space Policy 2023 encourages private sector participation, which brings new ideas, innovation, and competition into the Indian space sector.
  - This could lead to the development of more advanced technologies and efficient processes, driving the overall growth of the sector.
- **Economic growth and job creation**: As the private sector and startups gain more share in the space sector, it is expected to lead to economic growth and job creation.
  - The policy could spur investments, create high-tech jobs, and contribute significantly to the Indian economy.
- **Accessible and affordable space technology**: With increased competition, space technology and services could become more accessible and affordable, benefiting various sectors like communication, navigation, earth observation, and more.
- **Encouraging entrepreneurship:** The policy creates an encouraging environment for space startups, fostering entrepreneurship and innovation in the country.
  - It provides a clear path for entrepreneurs to enter the space sector, contributing to the startup ecosystem's growth.
- **Streamlining regulations:** By creating a single-window clearance system, the policy streamlines the regulatory process for space activities.

- o This makes it easier for businesses to navigate the regulatory landscape and encourages more entities to participate in space activities.

Challenges associated with the Indian Space Policy 2023:

- **Lack of Timeframe:** The policy lacks a specific timeframe for implementation and the transition of ISRO's practices, as well as the establishment of the regulatory framework by IN-SPACe.
  - o This makes it difficult to assess the progress and implementation of the policy.
- **Absence of Clear Rules and Regulations:** The policy framework requires clear and detailed rules and regulations in several areas, including foreign direct investment (FDI) and licensing, government procurement to support new space start-ups, liability provisions in case of violations, and an appellate framework for dispute settlement.
- **Ambiguity in IN-SPACe's Position and Authority:** Currently, IN-SPACe's position is ambiguous as it functions under the purview of the Department of Space.
  - o The Secretary (Space) is also Chairman of ISRO, the government entity to be regulated by IN-SPACe.
- **Legislative Authority:** The establishment of a regulatory body like IN-SPACe requires legislative authority to ensure its effectiveness and legitimacy.
  - o The absence of a dedicated legislation could hinder its ability to enforce regulations and provide a robust regulatory framework for the space industry.

Way Forward:

The introduction of India's new space policy is a significant milestone in fostering a commercial space ecosystem, but there are still important questions to be addressed to fully realize the potential benefits of private sector participation.

Source: **India Today**

The Fiscal health of States

Syllabus

- **Mains – GS 3 (Economy)**

Context: It has been observed that States' fiscal health improved after Covid-19 pandemic stress.

About Fiscal Condition of Various States:

- Stress tests show that the fiscal conditions of the most indebted State governments are expected to deteriorate further, with their **debt-GSDP ratio** likely to **remain above 35 per cent in 2026-27.**
- Based on the **debt-GSDP ratio in 2020-21**, Punjab, Rajasthan, Kerala, West Bengal, Bihar, Andhra Pradesh, Jharkhand, Madhya Pradesh, Uttar Pradesh and Haryana turn out to be the states with the highest debt burden.
- These **10 States account for around half of the total expenditure by all State governments in India**. Other vulnerability indicators also capture these 10 States in their cross hairs.
- Their GFD-GSDP ratios were equal to or more than 3 per cent in 2021-22, besides deficits in their revenue accounts (except Uttar Pradesh and Jharkhand).
- Moreover, the Interest Payment to Revenue Receipts (IP-RR) ratio, a measure of debt servicing burden on States' revenues, in 8 of these States was more than 10 per cent.
- Among the 10 States, Andhra Pradesh, Bihar, Rajasthan and Punjab exceeded both debt and fiscal deficit targets for 2020-21 set by the **15th Finance Commission** **(FC-XV).**
- Kerala, Jharkhand and West Bengal exceeded the debt target, while Madhya Pradesh overshot the fiscal deficit target. Haryana and Uttar Pradesh were exceptions as they met both criteria.

- Rajasthan, Kerala and West Bengal are projected to surpass the FC-XV targets for debt and fiscal deficit in 2022-23 (Budget Estimate/BE).

Basic terminologies:
- **Revenue expenditure** refers to the expenditure that neither creates an asset nor reduces the liability of the government. They are regular and recurring; Short-term; Example-Payment of salaries, maintenance of roads, street lights, etc.
- **Capital expenditure** refers to the expenditure that either creates an asset or reduces the liability of the government. They are irregular and non-recurring; Long-term; Example- Construction of metros, dams etc., repayment of loans to IMF etc., purchase of machinery, etc.
- **Monetary policy** is concerned with the management of interest rates and the total supply of money in circulation. It is generally carried out by the RBI.
- **Fiscal policy** estimates taxation and government spending. It should ideally be in line with the monetary policy, but since it is created by lawmakers, people's interest often takes precedence over growth.
- **Fiscal Responsibility and Budget Management (FRBM) Act** was enacted in 2003. The objective of the Act is
    o to ensure inter-generational equity in fiscal management;
    o long-run macroeconomic stability;
    o better coordination between fiscal and monetary policy and
    o Transparency in the fiscal operations of the Government.

Fiscal Challenges Faced by Indian States:
Revenue Related Challenges:
- The impact of the Covid-19 pandemic on the economic activity and tax collection.
- The uncertainty and volatility of GST revenue and compensation.
- The dependence on tax devolution from the Union and its formula-based allocation.
- The erosion of fiscal autonomy due to the subsumption of various taxes under GST.
- The limited scope for raising non-tax revenues such as user charges, fees, etc.
- The compliance and administrative issues in collecting own taxes such as property tax, stamp duty, etc.
- Out of 17 major States, 13 States have revenue deficits, and seven States have revenue deficits as the main driver of their fiscal deficits.
- These States are Andhra Pradesh, Haryana, Kerala, Punjab, Rajasthan, Tamil Nadu, and West Bengal.

Expenditure Related Challenges:
- The rising demand for public health and education services due to the pandemic and demographic factors.
- The need to invest in infrastructure and urban development to support growth and employment.
- The fiscal implications of various welfare schemes and subsidies for the poor and vulnerable sections.
- The burden of pension and salary liabilities for the public sector employees.
- The contingent liabilities arising from guarantees, loans, etc. given to public sector enterprises and other entities.
- The sustainability and servicing of the debt stock accumulated over the years.

Framework of Revenue Deficit Consolidation:
- Data from the last 20 years suggests that revenue deficit had almost disappeared from State Budgets before COVID-19.
- States, in aggregate, were generating revenue surpluses almost all the years during this period.

- However, the re-emergence of revenue deficit in recent years should take the focus back on the management of revenue deficit by creating an incentive compatible framework.

Benefits of Reducing Revenue Deficits for Indian States?

- Improving the fiscal health and sustainability of State finances and reducing their debt burden.
- Enhancing the quality of expenditure and increasing the share of capital expenditure in total expenditure.
- Boosting public investment in infrastructure and human capital, which can foster economic growth and development.
- Strengthening the credibility and confidence of investors and creditors in State finances.
- Ensuring macroeconomic stability and coordination with the Union Government.

Measures to Manage Revenue Deficit Effectively

Interest Free Loans

- Interest-free loans to the States by the Union Government may be linked to a reduction in revenue deficit.
- This will help eliminate the possibility of a substitution of States' own capital spending and also prevent the diversion of borrowed resources to finance revenue expenditure.
- Defined Time Path: For revenue deficit reduction with a credible fiscal adjustment plan would help restore fiscal balance and improve quality of expenditure.

Incentive Grants

- A forward-looking performance incentive grants could also be considered for a reduction of revenue deficit.
- In this context, different approaches provided by earlier Finance Commissions can be considered to decide the framework of the incentive structure.

Way Forward:

There has to be a differentiated approach for different States. The policy, for example, for Gujarat cannot be the same as for West Bengal because the starting conditions are different and their political economy is different. So different states cannot shrink their debt-to-GSDP ratio at the same speed.

There is a need for some kind of fiscal council or interstate mechanism that can ensure that FRBM limits on spending are strictly adhered to, along with ensuring the quality of expenditure of the States.

Source: **The Hindu**

Internationalisation of rupee: Why and what are the benefits?

Syllabus

- **Mains – GS 3 (Economy)**

Context: The **Reserve Bank of India's** **(RBI)** inter-departmental group (IDG) recently said that India remaining one of the fastest-growing countries and showing remarkable resilience in the face of major headwinds and the rupee has the potential to become an internationalised currency.

The Internationalisation of the Rupee:

- Internationalisation is a **process that involves increasing the use of the rupee** in cross-border transactions.
- These are **all transactions between residents in India and non-residents.**
- It involves -
  - o Promoting the rupee for import and export trade and then other current account transactions (measures imports and exports of goods and services, etc),

- o Followed by its use in capital account transactions - measures cross-border investments in financial instruments, etc.
- Currently, the **US dollar, the Euro, the Japanese yen and the pound sterling** are the leading reserve currencies in the world.
- China's efforts to make its currency renminbi has met with only limited success so far.
- India has allowed **only full convertibility on the current account as of now.**

Current Status for the Rupee's Internationalization:
- **Limited Progress in Internationalisation:** The rupee is far from being internationalized, the daily average share for the rupee in the global foreign exchange market hovers around 1.6%, while India's share of global goods trade is mere 2%.
- **Steps Taken to Promote Internationalisation:** India has taken some steps to promote the internationalisation of the rupee **(e.g., enable external commercial borrowings in rupees),** with a push to Indian banks to open Rupee Vostro accounts for banks from Russia, the UAE, Sri Lanka and Mauritius and measures to trade with about 18 countries in rupees instituted.
- However, such transactions have been limited, with India still buying oil from Russia in dollars.

Benefits of Internationalization of rupee
- **Increased global acceptance:** Internationalization of the rupee can increase its global acceptance, which can lead to more international transactions being conducted in the rupee, thereby reducing the demand for foreign currencies and reducing exchange rate risks.
- **Reduced transaction costs:** Internationalization of the rupee can reduce transaction costs for Indian businesses as they will not have to incur exchange rate fees for converting rupees into foreign currencies for international transactions.
- **Boost to trade and investment:** Internationalization of the rupee can promote trade and investment by making it easier for foreign businesses to invest in India and for Indian businesses to invest abroad.
- **Enhanced competitiveness:** A more freely traded rupee can enhance India's competitiveness in global markets by allowing the currency to reflect the country's economic fundamentals and reducing the need for the Reserve Bank of India to intervene in currency markets.
- **Diversification of reserves**: Internationalization of the rupee can diversify India's foreign exchange reserves away from a concentration in US dollars, reducing the risks associated with holding a single currency.

Challenges associated with Internationalizing the Rupee:
- **Exchange Rate Volatility:** Internationalising the rupee exposes it to greater exchange rate volatility. Fluctuations in the value of the rupee can impact trade competitiveness, foreign investment flows, and financial market stability.
  - o Managing exchange rate risks becomes crucial in order to mitigate potential adverse effects.
- **Capital Flight and Financial Stability**: Opening up the rupee to international markets may lead to capital flight if investors lose confidence in the currency or anticipate unfavourable economic conditions.
  - o This can strain the country's foreign exchange reserves, impact financial stability, and create challenges for monetary policy management.
- **Capital Controls:** India still has capital controls in place that limit the ability of foreigners to invest and trade in Indian markets.
  - o These restrictions make it difficult for the rupee to be used widely as an international currency.

- **Competing Currencies:** The rupee faces competition from established international currencies like the US dollar, euro, and yen, which enjoy widespread acceptance and liquidity.
  - o Gaining market share and displacing these dominant currencies can be a significant challenge.
- **Confidence and Perception**: The credibility and stability of India's economic and monetary policies play a crucial role in building confidence in the rupee.
  - o Any perception of policy uncertainty, lack of transparency, or geopolitical risks can impede the internationalisation process.
- **Adoption by Market Participants**: Convincing market participants, including businesses, individuals, and financial institutions, to adopt the rupee for international transactions requires trust, familiarity, and confidence in the currency.
  - o Building awareness and promoting the benefits of using the rupee globally is a significant challenge.

Way Forward: The RBI's Recommendations:
For the short term:
- Adoption of a standardised approach for examining the proposals on bilateral and multilateral trade arrangements.
- Encouraging the opening of the rupee accounts for non-residents both in India and outside India and integrating Indian payment systems with other countries for cross-border transactions.
- Strengthening the financial market by fostering a global 24×5 rupee market and recalibration of the **FPI (foreign portfolio investor) regime.**
- A review of taxes on masala (rupee-denominated bonds issued outside India by Indian entities) bonds, international use of **Real Time Gross Settlement (RTGS) for cross-border trade transactions, etc.**

For the long term:
- Efforts should be made for the inclusion of the rupee in **International Monetary Fund's** (IMF) special drawing rights (SDR).
- The SDR is an international reserve asset created by the IMF to supplement the official reserves of its member countries.
- The value of the SDR is based on a basket of five currencies **[the U.S. dollar, the euro, the Chinese renminbi, the Japanese yen, and the British pound sterling].**

Source: **Indian Express**

Fiscal Federalism in India

Syllabus
- **Mains - GS 3 (Economy)**

Context: The **Sixteenth Finance Commission** (16th FC) is likely to be appointed soon & The commission may have to face some challenging issues of fiscal federalism.
About Fiscal Federalism:
- It deals with the **division of financial powers** as well as the functions between multiple levels of the federal government.
- It has within its **ambit the imposition of taxes as well as the division of different taxes** between the Centre and the constituent units.
- Similarly, in the **case of joint collection of taxes**, an objective criterion is determined for the fair division of funds between the entities.
- Usually, there is a **constitutional authority (like Finance Commission in India) for the purpose to ensure fairness in the division.**

Significance of fiscal federalism:

- Fiscal federalism broadly considers the vertical structure of the public sector, fiscal policy institutions and their interdependence.
- **Fiscal federalism is significant broadly** due to following reasons:
    - o To determine at which level of government to assign different expenditure responsibilities.
    - o To determine the strategy to finance a given level of public goods and services.
    - o To adopt strategies to cap excessive spending and borrowing at each level of government.

Challenging issues in Fiscal Federalism:

- **Intersection domain of the Finance Commission and Goods and Services Tax (GST) Council:** The latter's decisions impact the own tax revenue flows of states and, more importantly, the size of the central tax revenue pool .
- The **demands for greater centralization of expenditure assignment** is another issue.
    - o India has a quasi-federal system.
    - o For purposes of legislation, regulation and administration, Schedule 7 of the Constitution assigns 47 subjects to the Concurrent List.
- **There is the issue of externalities:** If social benefits or losses can spill over across boundaries of a lower-level jurisdiction, it requires assignment of the subject to a higher-level jurisdiction with wider spatial coverage.
- **Three tier of government:** Where it is left to the states to decide what functions from the state list in the 7th schedule should be further delegated and assigned to local governments.
- **Inequality:** India's fiscal federalism driven by political centralisation has deepened socio-economic inequality, belying the dreams of the founding fathers who saw a cure for such inequities in planning.

Way Forward:

- As recommended by the **National Commission to Review the Working of the Constitution**, there should be a formal institutional framework to mandate and facilitate consultation between the Union and the States in the areas of legislation under the Concurrent List.
- **Recommendations of PV Rajamannar committee of 1971** needs to be considered which suggested that the **Finance commission** be made a permanent body.
- The Union government needs to invest resources towards facilitating effective consultation with States as a part of the lawmaking process.

Source: **LM**

National Green Hydrogen Mission

Syllabus

- **Mains – GS 3 (Environment and Ecology).**

Context: As part of its quest towards energy transition, the government has brought together stakeholders in order to explore how we can establish a Green Hydrogen ecosystem.

Hydrogen Fuel:

- Hydrogen fuel is a **zero-emission fuel burned with oxygen.**
- It can be used in **fuel cells or internal combustion engines**.
- It can be manufactured by
    - o Electrolysis of water by using direct current.
    - o Natural Gas Reforming/Gasification: Natural Gas on reaction with steam produces Synthesis gas. Synthetic gas is a mixture of hydrogen, carbon monoxide, and a small amount of carbon dioxide.

o Fermentation: Biomass is converted into sugar-rich feedstocks that can be fermented to produce hydrogen.

Types of Hydrogen Fuel

Hydrogen colour palette
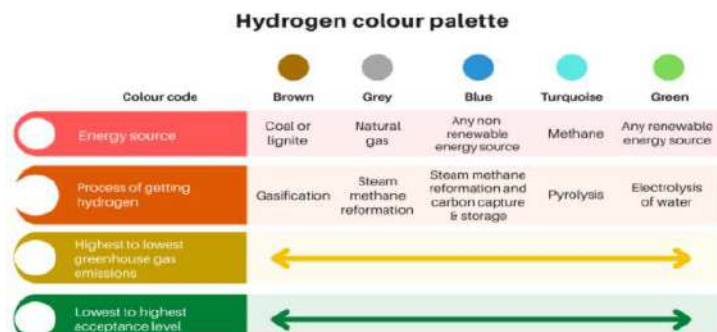
About National Green Hydrogen Mission?

- It is a program to incentivise the commercial production of green hydrogen and make India a net exporter of the fuel.

- The Mission will facilitate demand creation, production, utilization and export of Green Hydrogen.

Sub Schemes:

- Strategic Interventions for **Green Hydrogen Transition Programme (SIGHT):**
- It will fund the domestic manufacturing of electrolysers and produce green hydrogen.

Green Hydrogen Hubs:

- States and regions capable of supporting large-scale production and/or utilization of hydrogen will be identified and developed as Green Hydrogen Hubs.

Objective:

- Developing green hydrogen production capacity of at **least five MMT (Million Metric Tonne) per annum,** alongside adding renewable energy capacity of about 125 GW (gigawatt) in India by 2030.
- It aims to entail over Rs 8 lakh crore of total investments and is expected to generate six lakh jobs.
- It will also lead to a cumulative reduction in fossil fuel imports by over Rs. 1 lakh crore and an abatement of nearly 50 MT of annual greenhouse gas emissions.

Nodal Ministry: Ministry of New and Renewable Energy
Significance:

- It will help entail the decarbonisation of the industrial, mobility and energy sectors; reducing dependence on imported fossil fuels and feedstock; developing indigenous manufacturing capabilities; creating employment opportunities; and developing new technologies such as efficient fuel cells.

Significance/Intended outcomes of the NGHM

- **Renewable Energy Capacity Enhancement**: Development of green hydrogen production capacity of at least five MMT (Million Metric Tonne) per annum.
  - o An associated renewable energy capacity addition of about 125 GW in the country
- Investment boost
- Employment generation
- Cumulative reduction in fossil fuel imports.
- **Green House Gases Emission Reduction**: Abatement of nearly 50 MMT of annual greenhouse gas emissions and help government in achievement the commitments made at COP 26
- Under the **Paris Agreement of 2015**, India is committed to reducing its greenhouse gas emissions by **33-35% from the 2005 levels**.
  - o It is a legally binding international treaty on climate change with the goal of limiting global warming to below 2°C compared to pre-industrial levels.

Possible 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, 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.

Indian Initiatives for Promoting Clean Fuel Transition
- The **India-led International Solar Alliance (ISA)** is a coalition of solar-rich countries aiming at promoting solar energy globally. India aims to reach net zero emissions by 2070 and to meet fifty percent of its electricity requirements from renewable energy sources by 2030.
- Initiatives such as **Faster Adoption and Manufacturing of (Hybrid) Electric Vehicles (FAME) India Scheme and Atal Jyoti Yojana** promote the adoption of electric and hybrid vehicles and solar-powered lighting to rural areas, a move that reduces emission footprint.
- The '**National Policy on Biofuels'** notified by the Government in 2018 envisaged an indicative target of 20% ethanol blending in petrol by year 2030.
- A "**Roadmap for Ethanol Blending in India 2020-25**" which lays out a detailed pathway for achieving 20% ethanol blending.

Way Forward:
There is a need to **announce incentives to convince enough users of industrial hydrogen** to adopt green hydrogen. India needs to develop supply chains in the form of pipelines, tankers, intermediate storage and last leg distribution networks as well as put in place an effective skill development programme to ensure that lakhs of workers can be suitably trained to adapt to a viable green hydrogen economy.

Source: PIB

PRACTICE QUESTIONS

Q1) Consider the following statements

Statement-I : Nitrogen Dioxide is created by natural sources that include volcanoes and microbes.
Statement-II : Nitrogen Dioxide causes water pollution.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for
Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q2) Consider the following pairs:

Hornbill species	IUCN Status
Great Hornbill:	Near threatened
Narcondam Hornbill:	Endangered
Indian Grey Hornbill:	Near Threatened

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q3) Consider the following statements

Statement-I : GSTN Provides common Registration, Return, and Payment services to Taxpayers.
Statement-II : GSTN was established in 2015.

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

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

Q4) Consider the following statements

Statement-I : National Anti-Doping Agency (NADA) is under the Ministry of Sports and Youth Affairs.
Statement-II : NADA is a constitutional body.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for
Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q5) Consider the following pairs:

Beluga	critically endangered
Stellate	critically endangered
Russian sturgeon	critically endangered
Sterlet	Endangered

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. All four

Q6) Consider the following statements

Statement-I : The Santhal rebellion began in 1857.
Statement-II : It was led by Sidhu, Kanhu, Bhairav, and also their two sisters Phulo and Jhano.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement-II is incorrect
d. Statement-I is incorrect but Statement-II is correct

Q7) Consider the following statements

Statement-I : Exercise SALVEX was conducted between Indian Navy and the Japanese Navy.
Statement-II : The seventh edition of the exercise was conducted in Kochi, India.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q8) Consider the following pairs:

1. Stratovolcano: it is a conical volcano built up by much-hardened lava.

2. Ring of Fire: it is a large cauldron-like hollow that forms shortly after the emptying of a magma chamber in a volcano eruption.
3. Caldera: an area around the Pacific Ocean known for its high volcanic and seismic activity.

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q9) Consider the following statements

Statement-I :
The Bureau of Water Use Efficiency makes necessary regulatory directions to promote Water Use Efficiency.
Statement-II :
It has been set up under the scheme of the National Water Mission.

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

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

Q10) Consider the following statements

Statement-I : Exercise "Nomadic Elephant – 2023" will commence in Ulaanbaatar, Mongolia.
Statement-II : The last edition of the exercise was held at, Bakloh, Himachal Pradesh in October 2019.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

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

Q11) Consider the following statements

Statement-I : Having a vitamin A deficiency is a risk factor for Measles.
Statement-II : There is no vaccine available for Measles.
Which one of the following is correct in respect of the above statements?

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

Q12) Consider the following pairs:

Rescue Operation	Countries
1. Vande Bharat Mission	Yemen
2. Operation Raahat	Kuwait
3. Operation Maitri	Nepal

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q13) Consider the following statements

Statement-I : Solar flares have the energy equivalent of a billion hydrogen bombs.

Statement-II : X-class solar flares are the smallest and least significant events to have any impact on Earth.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for
   Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q14) Consider the following pairs:

Malabar	Air Force exercise between India and Japan
SHINYUU Maitri	Naval exercise between India, Japan with the United States.
Dharma Guardian	Military Exercise between India and Japan

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q15) Consider the following statements

Statement-I : NGT is mandated to make and endeavor for disposal of applications or appeals finally within 6 months of filing.
Statement-II : NGT's principal Place of Sitting is New Delhi but it has 4 zonal benches in Bhopal, Mumbai, Kolkata and Chennai.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q16) Consider the following statements

Statement-I : James Webb Space Telescope telescope was made by the European Space Agency.
Statement-II : James Webb Space Telescope telescope was launched in Ariane 5 rocket.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q17) Consider the following pairs:

Mission Vatsalya Scheme:	Ministry of Women and Child Development
SWAMIH Fund:	Ministry of Finance.
Nirbhaya Fund	Ministry of Agriculture

How many of the above pairs are correctly matched?

a. Only one

b. Only two
c. Only three
d. None

Q18) Consider the following statements

Statement-I : Directorate General of Civil Aviation (DGCA) headquarters are in Kolkata.
Statement-II : DGCA is a statutory body.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement-II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q19) Consider the following statements

Statement-I : National Investigation Agency was established in 2008.
Statement-II : National Investigation Agency headquarters are in Mumbai.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q20) Consider the following pairs:

1. Sub Standard: an asset that has remained as an NPA for a period exceeding twelve months.
2. Doubtful: an asset that is classified as an NPA for a period not exceeding twelve months.
3. Loss: assets identified by the bank as NPA but it is not yet completely written off.
4. Standard Assets: assets that carry a normal risk and are not NPA in a real sense.

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. All four

Q21) Consider the following statements

Statement-I : Dark matter attracts and holds galaxies together.
Statement-II : Dark matter emits light.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement-II is incorrect
d. Statement-I is incorrect but Statement-II is correct

Q22) Consider the following statements

Statement-I : Parker Solar Probe is launched by European Space Agency.
Statement-II : Parker Solar Probe was launched in 2022.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q23) Consider the following pairs:

1. UNEP: it is the leading global authority on the environment.
2. FAO: a specialized agency of the United Nations that leads international efforts to defeat hunger.
3. WOAH: United Nations agency that connects nations, partners and people to promote health, keep the world safe and serve the vulnerable.
4. WHO: An intergovernmental organization, we focus on transparently disseminating information on animal diseases, improving animal health globally.

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. All four

Q24) Consider the following statements

Statement-I : Gucchi mushrooms are rich in antioxidant and antimicrobial properties.
Statement-II : Gucchi mushrooms are found in Jammu and Kashmir.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I

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

Q25) Consider the following statements

Statement-I : Directorate of Revenue Intelligence suggest remedies for loopholes in law and procedures to combat smuggling.
Statement-II : It collects intelligence about the smuggling of narcotics.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for
   Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q26) Consider the following statements

Statement-I : Pradhan Mantri Rashtriya Bal Puraskar can be given to a child who is an Indian Citizen not exceeding 20 years.
Statement-II : It includes a medal, a cash prize of Rs. 1,00,000, a certificate and a citation.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q27) Consider the following pairs:

River	Origin
Hindon	Vindhya Range
Yamuna	Yamunotri Glacier
Teesta	Shivalik Hills

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q28) Consider the following statements

Statement-I : Advance Authorisation Scheme brings down the cost of the final export product.
Statement-II : It is under the Ministry of Statistics and Program Implementation.
Which one of the following is correct in respect of the above statements?

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

Q29) Consider the following statements

Statement-I : Bacteriophages only attack bacteria and are harmless to people, animals, and plants.
Statement-II : Bacteriophages can only multiply and grow inside a bacterium.
Which one of the following is correct in respect of the above statements?

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

Q30) Consider the following pairs:

Vaccine	Disease
Dengvaxia	Diptheria
DPT3	Whooping cough
Pediarix	Hepatitis B

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q31) Consider the following statements

Statement-I : Brucellosis Zoonotic Diseases.
Statement-II : The infection can be treated with antibiotics.

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for
Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q32) Consider the following pairs:

Organizations	Headquarters
Indian Space Research Organisation:	Hyderabad
Food Corporation of India:	New Delhi
IN-SPACe:	Bhubneshwar

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q33) Consider the following statements

Statement-I : Candida auris has been tagged as an "urgent" and "critical" threat by WHO.
Statement-II : It is resistant to multiple classes of antifungal drugs.
Which one of the following is correct in respect of the above statements?

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

Q34) Consider the following statements

Statement-I : Picolinic acid is an intermediate in the metabolism of tryptophan.
Statement-II : It stays inside the body only for a long duration.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for

Statement-I

c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q35) Consider the following statements

Statement-I : Pradhan Mantri Awas Yojana-Gramin (PMAY-G) was launched in 2019.
Statement-II : Households with non-agricultural enterprises registered with the Government are excluded from this scheme.
Which one of the following is correct in respect of the above statements?

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

Q36) Consider the following pairs:

Spacecraft	Agency
MESSENGER	NASA
BepiColombo	ESA and JAXA
Mariner 10	ESA

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q37) Consider the following statements

Statement-I : The Muslim World League was established in 1992.
Statement-II : It is an Observer in consultative status with the Economic and Social Council (ECOSOC).

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

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q38) Consider the following pairs:

Schemes	Launched in
Senior Citizen Savings Scheme	2004
SAMARTH scheme	2023
National Social Assistance Programme (NSAP)	1995

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q39) Consider the following statements

Statement-I : SAMARTH scheme ensures a steady supply of skilled manpower in the labour-intensive textile sector.
Statement-II : The scheme covers the entire value chain of textiles, excluding Spinning and Weaving.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

c. Statement-I is correct but Statement-II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q40) Consider the following statements

Statement-I : Shelf clouds are characterized by a low-lying, horizontal formation.
Statement-II : They are formed when a mass of cold, dense air forcefully interacts with a warmer air mass.
Which one of the following is correct in respect of the above statements?

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

Q41) Consider the following statements

Statement-I : Bastille Day Parade is held twice a year in France.
Statement-II : This day is marked as the National Day of France.
Which one of the following is correct in respect of the above statements?

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

Q42) Consider the following pairs:

Exercise	Countries
Exercise SAMPRITI	1. India and Maldives
Exercise Garuda	1. India Malaysia
Exercise SAMUDRA SHAKTI	1. India and Indonesia

How many of the above pairs are correctly matched?
a. Only one
b. Only two
c. Only three
d. None

Q43) Consider the following statements

Statement-I : Commission on Genetic Resources for Food and Agriculture's (CGRFA) membership is open to all Members of FAO.
Statement-II : Its 19th session took place in Rome, France.
Which one of the following is correct in respect of the above statements?

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

Q44) Consider the following statements

Statement-I : External commercial borrowings (ECB) provide an opportunity to borrow large volumes of funds.
Statement-II : The funds are available for a relatively long term.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

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

Q45) Consider the following pairs:

River	Origin
1. Son	Amarkantak Hills, Madhya Pradesh
2. Gomti	Gomat Taal, Uttarakhand
3. Ghaggar	Shivalik Hills, Himachal Pradesh

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q46) Consider the following statements

Statement-I : NASA's Perseverance Rover was launched in 2002.
Statement-II : Its landing site was Jezero Crater, Mars.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-11 is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for
    Statement-I
c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

Q47) Consider the following statements

Statement-I : The first International Biology Olympiad (IBO) was held in Czechoslovakia.

Statement-II : India organized this Olympiad in 2008.
Which one of the following is correct in respect of the above statements?

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

Q48) Consider the following pairs:

Navigation systems	Countries
GLONASS (Global Orbiting Navigation Satellite System)	Russia
Galileo	Italy
NAVIC (Navigation with Indian Constellation)	India
Bei-Dou	Japan

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

Q49) Consider the following statements

Statement-I : The Strait of the Dardanelles connects the Sea of Marmara to the Black Sea.
Statement-II : Kerch Strait connects the Black Sea to the Sea of Azov.
Which one of the following is correct in respect of the above statements?

a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

c. Statement-I is correct but Statement II is incorrect
d. Statement-I is incorrect but Statement II is correct

| 2. | Mugger crocodile | Critically Endangered |
| 3. | Gharials | Least Concern |

Q50) Consider the following pairs:

| Species | IUCN Status |
| 1. Saltwater crocodile | Vulnerable |

How many of the above pairs are correctly matched?

a. Only one
b. Only two
c. Only three
d. None

KEY ANSWERS

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