

THE IAS GAZETTE

A House Journal of **APTI PLUS**

MAY 2021



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A Monthly Periodical for aspirants of UPSC Examination

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Live mint | The Economic Times
PIB | PRS | ET
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(NITI Aayog, Budget, WEF
Economic Survey etc.)
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All standard reference books

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Arise, awake and stop not till the goal is reached.

- Swami Vivekananda

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WORLD HERITAGE DAY

GS-I CULTURE & HERITAGE

In News

- Every year, the United Nations marks April 18 as the **International Day for Monuments and Sites**.
- In many countries also celebrated as World Heritage Day.
- The theme for this year is **"Complex Pasts: Diverse Futures"**.

Background

- The International Day for Monuments and Sites was proposed by the **International Council on Monuments and Sites (ICOMOS)** in 1982 and approved by the General Assembly of UNESCO in 1983.

Objective

- The aim is to promote awareness about the diversity of cultural heritage of humanity, their vulnerability and the efforts required for their protection and conservation.

ICOMOS

- The International Council on Monuments and Sites is a **professional association** that works for the **conservation and protection of cultural heritage places** around the world.
- Headquartered in **Charenton-le-Pont, Paris, France**.
- Founded in 1965 in Warsaw as a result of the **Venice Charter of 1964**.
- **ICOMOS** offers advice to UNESCO on World Heritage Sites.
- ICOMOS is a partner and founding member of the Blue Shield, which works to protect the world's cultural heritage threatened by wars and natural disasters.
 - Blue Shield, is an **international organization** founded in 1996 to protect the world's cultural heritage from threats such as armed conflict and natural disasters.
 - Its name derives from the blue shield symbol used to signify cultural sites protected by the **1954 Hague Convention for the Protection of Cultural Property in Armed Conflict**.



Concept of International heritage

- The **Athens Charter of 1931** introduced the concept of international heritage.
- In 1964, the Second Congress of Architects and Specialists of Historic Buildings, meeting in Venice, adopted 13 resolutions.
- The first created the International Charter on the Conservation and Restoration of Monuments and Sites, better known as Venice Charter; the second, put forward by UNESCO, created ICOMOS to carry out this charter.

India and International Heritage Sites

- India is home to **38 UNESCO World Heritage Sites**, out of the **1121** such spots identified **around the world**.
- Of these, 30 are 'cultural', and 7 are 'Natural'. One is classified as 'Mixed'.
- So far, only China, Italy, Spain, Germany, and France have more locations on the list than India.

Full list of UNESCO World Heritage Sites in India

Cultural (30)

- | | |
|--|--|
| • Agra Fort (1983) | • Chhatrapati Shivaji Terminus (formerly Victoria Terminus) (2004) |
| • Ajanta Caves (1983) | • Churches and Convents of Goa (1986) |
| • Archaeological Site of Nalanda Mahavihara at Nalanda, Bihar (2016) | • Elephanta Caves (1987) |
| • Buddhist Monuments at Sanchi (1989) | • Ellora Caves (1983) |
| • Champaner-Pavagadh Archaeological Park (2004) | • Fatehpur Sikri (1986) |

- Great Living Chola Temples (1987,2004)
- Group of Monuments at Hampi (1986)
- Group of Monuments at Mahabalipuram (1984)
- Group of Monuments at Pattadakal (1987)
- Hill Forts of Rajasthan (2013)
- Historic City of Ahmadabad (2017)
- Humayun's Tomb, Delhi (1993)
- Jaipur City, Rajasthan (2019)
- Khajuraho Group of Monuments (1986)
- Mahabodhi Temple Complex at Bodh Gaya (2002)
- Mountain Railways of India (1999,2005,2008)
- QutubMinar and its Monuments, Delhi (1993)
- Rani-ki-Vav (the Queen's Stepwell) at Patan, Gujarat (2014)
- Red Fort Complex (2007)
- Rock Shelters of Bhimbetka (2003)
- Sun Temple, Konârak (1984)
- TajMahal (1983)
- The Architectural Work of Le Corbusier, an Outstanding Contribution to the Modern Movement (2016)
- The JantarMantar, Jaipur (2010)
- Victorian Gothic and Art Deco Ensembles of Mumbai (2018)

Natural (7)

- Great Himalayan National Park Conservation Area (2014)
- Kaziranga National Park (1985)
- Keoladeo National Park (1985)
- Manas Wildlife Sanctuary (1985)
- Nanda Devi and Valley of Flowers National Parks (1988,2005)
- Sundarbans National Park (1987)
- Western Ghats (2012)

Mixed (1)

- Khangchendzonga National Park (2016)

Importance of preserving Heritage Sites

- **Identity:** Conservation of heritage provides a sense of identity and continuity in a fast changing world for future generations.
- **Empowerment:** As a source of identity, heritage is a valuable factor for empowering local communities and enabling vulnerable groups to participate fully in social and cultural life.
- **Harmony:** It can also provide time-tested solutions for conflict prevention and reconciliation.
- **Tourism:** It contributes to the development of a region as an important tourist destination.
- **Treasure of a country:** History serves as a laboratory. Historical places give glorified pictures of one country.
- **Status of past:** They not only give us idea about the socio-economic state of the country but also give a vivid idea about the religious and political status.
- **Light on societal evolution:** Historical places not alone for India but to the world are the pictures of the rule, the culture, the faith of changing times which that particular area underwent with the ages. Historical places are there to show light on our earlier generations, their way of living, their skills, their knowledge etc.
- **Connection to past:** Heritage sites are living monuments & record of certain happenings and this is our real connection to our past. Monuments are the grappling-irons that bind one generation to another.
- **Character to region:** Preserving heritage sites is important due to the character they bring to a neighborhood or a place.

It is rightly said that,

"Memory is the treasure house of the mind wherein the monuments thereof are kept and preserved." Preserving our past gives us more understanding and hope for the future.

In News

- Tourism and Culture Minister has inaugurated the **first-ever online exhibition on Ramayana**.
- The online exhibition showcases forty nine miniature paintings collections of National Museum, New Delhi from different art schools of India.
- The paintings were dated **between 17th century and 19th century**.

Ramayana

- Rāmāyana is one of the two major Sanskrit epics of ancient Indian history, the other being the Mahābhārata.
- It was written by **Maharishi Valmiki**.

Ramlila

- In 2008, UNESCO declared **Ramlila as Intangible Cultural Heritage of Humanity**.
- **Ramlila is any dramatic folk re-enactment of the life of Rama**.
- The epic and its dramatic play migrated into southeast Asia in the 1st millennium CE.
- Ramlila is a part of performance arts culture of Indonesia particularly the Hindu society of Bali, Myanmar, Cambodia and Thailand.

UNESCO Intangible Cultural Heritage

- Intangible cultural heritage (ICH) is promoted by UNESCO as a part to the World Heritage focusing mainly on intangible aspects of culture.
- These sites are protected and promoted under the **Convention for the Safeguarding of Intangible Cultural Heritage**.
- In India, **SangeetNatak Academy is the nodal agency**.
- Five broad domains in which intangible cultural heritage is manifested are:
 - Oral traditions and expressions, including language as a vehicle of the intangible cultural heritage;
 - Performing arts;
 - Social practices, rituals and festive events;
 - Knowledge and practices concerning nature and the universe;
 - Traditional craftsmanship.
- China with 42 has the most number of Intangible Cultural Heritage elements inscribed by UNESCO.

List of Intangible Cultural Heritage Sites in India

- | | |
|--|---|
| 1. Tradition of Vedic chanting | 8. Buddhist chanting of Ladakh |
| 2. Ramlila, the traditional performance of the Ramayana | 9. Sankirtana, ritual singing, drumming and dancing of Manipur |
| 3. Kutiyattam, Sanskrit theatre | 10. Traditional brass and copper craft of utensil making among the Thatheras of Jandiala Guru, Punjab |
| 4. Ramman, religious festival and ritual theatre of the Garhwal Himalayas. | 11. Yoga |
| 5. Mudi yettu, ritual theatre and dance drama of Kerala | 12. Nawrouz |
| 6. Kalbelia folk songs and dances of Rajasthan | 13. KumbhMela |
| 7. Chhau dance | |

Significance

- **Cultural Diversity:** While fragile, intangible cultural heritage is an important factor in maintaining cultural diversity in the face of growing globalization.

- **Intercultural dialogue:** An understanding of the intangible cultural heritage of different communities helps with intercultural dialogue, and encourages mutual respect for others ways of life.
- **Knowledge Transmission:** The importance of intangible cultural heritage lies in the wealth of knowledge and skills that is transmitted through it from one generation to the next. The social and economic value of this transmission of knowledge is relevant for minority groups and for mainstream social groups within a state, and is as important for developing States as for developed ones.

UNESCO

- **It is a specialised agency of the United Nations (UN).**
- **Parent Organization:** ECOSOC (United Nations Economic and Social Council)
- UNESCO is a member of the United Nations Sustainable Development Group.
- UNESCO aims at promoting world peace and security through international cooperation in education, the sciences, and culture.
- It has 193 member states. Headquartered at the World Heritage Centre in Paris, France.
- It was founded in 1945 as the successor to the League of Nations' International Committee on Intellectual Cooperation.
- **Important conventions and International treaties of UNESCO**
 - The Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005)
 - The Convention for the Safeguarding of the Intangible Cultural Heritage (2003)
 - The Universal Declaration on Cultural Diversity (2001)
 - The Convention on the Protection of the Underwater Cultural Heritage (2001)
 - The Convention for the Protection of the World Cultural and Natural Heritage (1972)
 - The Convention on the Means of Prohibiting and Preventing the Illicit Traffic of Cultural Property (1970)
- **Publication: Education for All Global Monitoring Report**
- **Other Initiatives**
 - Man and Biosphere Programme:
 - World Heritage Programme:
 - UNESCO Global Geopark Network:
 - **UNESCO's Network of Creative Cities (UCCN):** It covers seven fields: Crafts and Folk Arts, Media Arts, Film, Design, Gastronomy, Literature and Music.
- **Indian cities in UCCN:**
 - Hyderabad – Gastronomy
 - Mumbai – Film
 - Chennai - Creative city of Music
 - Jaipur - Crafts and Folk Arts
 - Varanasi - Creative city of Music

LINGAYATISM AND VEERASHAIVISM

GS-I MEDIEVAL HISTORY

Context

- Recently, Prime Minister Modi paid tributes to late Shivakumara Swamiji, a prominent Lingayat seminary in Karnataka, on his birth anniversary.
- He was referred to as **Nadedaaduva Devaru (walking God)** in the state.

Lingayatism

About

- Lingayatism is a **Shaivite Hindu religious** tradition in India.
- The terms Lingayatism and Veerashaivism have been used synonymously, but they are not the same.

- In 12th century the groups splitted up and adherents of this faith are known as Lingayats.

Origin and Background

- The tradition of Lingayatism is known to have been founded by social reformer and **philosopher Basavanna** in 12th century Karnataka.
- Basavanna's religious movement was **during thereign of King Bijala II**.
- This period in Karnataka was characterized by the **dominance of Brahmanical Hindu values**, a social system based on **caste restrictions and a feudal economy**.
- The Lingayats emerged as a **reactionary force against Hinduism** in the twelfth century.
- While it **rejected most of the broad Hindu traditions**, it also assimilated aspects of it.

Lingayatism and Bhakti Movement: The link

- The emergence of the Lingayat sect can be located within the larger trend of Bhakti movements that had swept across South India from the 8th century AD onwards.
- The Bhakti tradition was a **social reform movement that developed around Hindu Gods and Goddesses** but split away from the Hindu fold by offering a path to spirituality regardless of their caste and creed.
- In a way, they were movements that took birth within Hinduism but strove to rectify the unjust practices within the tradition.

The Bhakti movement refers to the trend that was brought forward by a number of Hindu saints in medieval Hinduism that sought to bring religious reforms by adopting the method of devotion to achieve salvation. It originated in eighth-century **south India (now Tamil Nadu and Kerala states)**, and spread northwards. The Bhakti movement regionally developed around different gods and goddesses, and some sub-sects were **Vaishnavism (Vishnu)**, **Shaivism (Shiva)**, **Shaktism (Shakti goddesses)**, and **Smartism**. The Bhakti movement began with the **aim of reforming Hinduism against evil practices, the caste system and the dominance of Brahmanas**.

Philosophy

- Lingayats are followers of Basavanna and the sharana writers, whose philosophy is expressed in **thousands of vachanas**.
- In several vachanas, the sharanas have **rejected the Vedas, shastras, smritis and the Upanishads**.
- They **rebuffed faith in karma based on caste, denied the concept of paap and punya** which was based on karma.
- They **spurned the notion of heaven and hell** as based on paap and punya.
- They **scorned temple and idol worship**.
- They **rejected the phallic linga symbol of Shiva** and opted for ishtalinga, which **represents inner conscience**.
- Worship is centred on Shiva as the universal god in the iconographic form of Ishtalinga.
- Lingayatism emphasizes **qualified monism**, with philosophical foundations similar to those of the 11th–12th-century South Indian philosopher Ramanuja.
- They declared that **work was worship** and tried to break the barriers of caste by inter-caste dining.
- They fought against **discrimination on the basis of gender and birth**. They **abhorred superstitions**.
- They **ignored Sanskrit** – which was understood by very few – and addressed the people in Kannada.

Qualified Monism

It admits plurality. Vishishtadvaita is one of the most popular schools of the **Vedanta school of Hindu philosophy**. Vedanta literally means the **end of the Vedas**. VishishtAdvaita is a non-dualistic school of Vedanta philosophy. It is non-dualism of the qualified whole, in which **Brahman alone exists, but is characterized by multiplicity**. It can be described as **qualified monism** or **qualified non-dualism** or **attributive monism**. It is a school of Vedanta philosophy which **believes in all diversity subsuming to an underlying unity**.

Ramanuja, the 11–12th century philosopher was the main proponent of Vishishtadvaita philosophy.

Basavanna and his Contribution

- Mahatma Basveshwar was an Indian 12th-century statesman, philosopher, poet, social reformer and Lingayat saint in the Shiva-focussed Bhakti movement during the reign of the **KalyaniChalukya/Kalachuri** dynasty.
- He spread social awareness through his poetry, popularly **known as Vachanaas**.
- He **rejected gender or social discrimination, superstitions and rituals**.
- But **introduced Ishtalinga necklace**, with an image of the Shiva Linga, to every person regardless of his or her birth, to be a constant reminder of one's bhakti (devotion) to Shiva.
- As the **chief minister of his kingdom**, he introduced new **public institutions such as the AnubhavaMantapa** (or, the "hall of spiritual experience"), which welcomed men and women from all socio-economic backgrounds to discuss spiritual and mundane questions of life, in open.
- Basavanna's **vision of a societal order was one based on human freedom, equality, rationality, and brotherhood**.
- His prime target was the **caste hierarchy which he rejected** with full force.
- In one of his vachanas, Basavanna asserts that **"the birthless has no caste distinctions, no ritual pollution."**
- He **rejected the Hindu Brahmanical ritualism** and its adherence to sacred texts like the Vedas.
- The **Basavarajadevara Ragale** by the **Kannada poet Harihara** (c.1180) is the earliest available account on the life of Basavanna.
- A full account of Basava's life and ideas are narrated in a 13th-century sacred Telugu text, the **Basava Purana** by **Palkuriki Somanatha**.

Present Status of Lingayatism

- The community which currently forms 17 per cent of Karnataka's population and 10 percent of Maharashtra's.
- In the 21st century, some Lingayats have sought legal recognition as a religion distinct from Hinduism and Veerashaivas.

Veerashaiva

- From broader Veerashaivas, Lingayatssplitted in 12th Century.
- **Founder** –Panchacharyas; almost about **5500 -6000 years ago**.
- The Panchacharyas are the five Gurus who apparently incarnated directly from Sivalinga and established the Virasaiva religion and Philosophy. Hence they are called as **Lingodbhavas**.
- Veerashaivas are the **followers of the five peethas (religious centres), called panchapeethas**. They are- Kashi mutt, Rameswaram mutt, Ujjaini mutt, Rambhapura mutt and Srishaila mutt.
- These peethas are set up on similar lines to the four peethas set up by AdiShankara.
- The **Veerashaiva faith is identical to the Brahmanical belief** that they are born from the ears of Brahma.
- This definitely did not form the foundation of Basavanna's thought. Basavanna had rejected all such Brahmanical notions.
- Veerashaivas **rejected Basavanna as the founder of the 'Veerashaiva dharma'** and claimed that the founders of their dharma predated him.
- They consider **Siddhantha Shikhamani** as their holy book.
- They are spread across Karnataka, Kerala, Maharashtra, Andhra Pradesh and Telangana.

Lingayatism vs Veerashaiva

- The essential difference between the Lingayata dharma and the Veerashaiva is that the latter accepts the Vedic texts and practices like caste and gender discrimination, while Basavanna not only protested these, he offered an alternative dharma.

Practice	Veerashaiva	Lingayat
The founder	Panchacharyas	Basavanna
Religious script	Vedas, Agama, SiddhantaShikhamani	Vachana literature
Caste and gender equality	No equality. It puts Aradhyas at the top of the ladder, while there is no gender equality	Complete equality of men and women in religious, political and social practices
Worship	The statue of Shiva, and Shiva as envisaged in the Vedas with snake around the neck etc	Shiva (ishtalinga) as a formless, timeless entity that resides in each and every life form
Temples and priests	Has a system of temples and priests	Bans temple worship. Worships only ishtalinga

Demand for a Separate Religion

Arguments for

- **Scholarly Researches:**
 - Scholars like M. M. Kalburgi and SM Jaamdar did extensive research into the vachanas or religious-poetic verses written by Basavanna 800 years ago. These scholars have produced evidence to show that the Lingayats were a religious entity separate from the Hindus.
- **Form of Worship:**
 - The Lingayats are strict monotheists. They enjoin the worship of only one God, namely called Linga (Shiva).
 - However, it should be noted that the words 'Linga' here does not mean the Linga which is established in temples, but the universal consciousness qualified by the universal energy (Shakti).
- **Supreme Court Observations:**
 - In **Ratilal Panachand Gandhi vs The State Of Bombay** - SC held that Religion is that which binds a man with his Creator. Therefore, whatever binds a man to his own conscience and whatever moral and ethical principles regulate the lives of men that alone can constitute religion as understood in the Constitution.
- **Constitutional Provision:**
 - **Article 25** protects religious freedom as far as individuals are concerned. The right is not only given to the citizens of India but to all persons, and the right is to profess, practice and propagate religion.
- **Official Surveys:**
 - In **official surveys up to 1930**, Lingayats were identified as "Lingayats", with Veerashaivas being part of Lingayats.
- **Philosophy:**
 - Lingayat community members argue that it is different from that of Hinduism as it is Gender-neutral, caste-neutral treatment of equality. While Hinduism converted workmanship into castes, Basava reversed the castes into workmanship again.
- **Loss of Identity:**
 - With Lingayats getting increasingly subsumed within the Veerashaiva and Hindu nomenclature, teachings of Basavanna are losing their distinct place in society. There is concern that for Lingayatism to survive, it must be identified as a separate religion.
- **Legal Contradiction:**
 - In the Hindu Marriage Act, 1955 and Hindu Succession Act, 1956, Lingayats, Buddhists, Jains and Sikhs are included among Hindus. But Buddhists, Sikhs and Jains were identified by state and central governments as minority religions in 1993, 1963 and 2014 respectively. Only Lingayats remain unrecognised under a separate religious status.

Arguments against

- **Fragmentation of Society:**
 - Lingayats as a religious minority would split society further and introduce more cleavages in the socio-economic fabric.
- **Sectarianism:**
 - Tahir Mahmood former chair of National Commission for Minorities held that “Pluralism within the broad Hindu Religion is different from sectarian diversity in dogmatic religions like Islam or Christianity.”
- **Just a Sub-division:**
 - Prof. Chidananda Murthy, point that ideas of nothingness in the Lingayat tradition derive from the Upanishads and how the ideas of the body draw from the Yoga Sutras.
- **Contradictory:**
 - Some of the aspects of Hinduism are assimilated in Lingayatism and they ascribe to it. The community's demand was also weakened by its subsumption within the Veerashaiva nomenclature. This happened after large number of Hindu Veerashaivas embraced Lingayatism while continuing to follow Hindu practices.

Minority Status

- In 2018 seven-member panel headed by retired judge **Justice Nagamohan Das** recommended to grant religious minority status to “Lingayats and Veerashaiva-Lingayats.

Benefits of Minority Status

- **Reservation:** Lingayats will get additional benefits in education and employment on par with minorities.
- **Benefits under Article 25:** These include freedom of conscience and free profession, practice and propagation of religion.
- **Benefits under Article 28:** It includes freedom in terms of attendance at religious instruction or religious worship in certain educational institutions.
- **Section 29, 30:** Section 29, which includes protection of interests of minorities, and section 30, which includes the right of minorities to establish and administer educational institutions, will also be applicable.

Status

- Karnataka Government accepted the recommendations of **Justice Nagamohan Das Panel.**
- But, the benefits of reservation under the new status will be available only after the Centre accepts the recommendations and also notifies it.

Final Words

- The Government should evaluate the demands of the communities rationally without politicizing the issue to gain poll prospects.

MEGALITHIC ERA

GS-I ANCIENT HISTORY

Context

- A cave found during the renovation work of Sri AnanthaPadmanabha temple at Paniyadi in Karnataka recently belongs to the megalithic period.
- The discovery is unique in understanding the antiquity of the Phanis.

About Phanis

- Pani and Haadi, together forming Paniyadi, means settlement of Phanis.
- Phanis were **referred to in the Mahabharata and the Puranas** as ancient **original inhabitants** of the country.
- Phanis were **famous for their Naga worship** while Naga was their totemic emblem.

- Paniyadi's **presiding deity AnanthaPadbhanabha** was also related with Naga worship.

Megalith

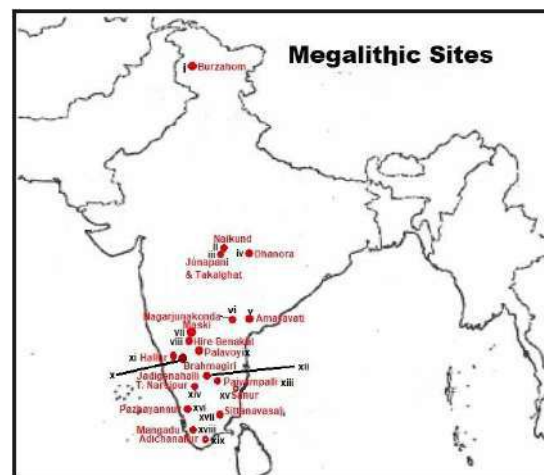
- A megalith is a large pre-historic stone that has been used to construct a structure or monument.
- Megaliths were constructed **either as burial sites or commemorative (non-sepulchral) memorials.**

Period

- In India, archaeologists trace the **majority of the megaliths to the Iron Age (1500 BC to 500 BC)**, though some sites precede the Iron Age, **extending up to 2000 BC**.

Coverage

- Megaliths are spread across the Indian subcontinent, though the bulk of them are found in peninsular India.
- They are concentrated in the states of **Maharashtra (mainly in Vidarbha), Karnataka, Tamil Nadu, Kerala, Andhra Pradesh and Telangana.**
- Around 2,200 megalithic sites can be found in peninsular India itself.



Types of Megalith Structures

- **Menhir:** “standing stone”. It could also exist as part of a group of similar stones.
- **Capstone:** Single megaliths placed horizontally, often over burial chambers, without the use of support stones.
- **Stone circles:** A monument of standing stones. The arrangement of the stones may be in a circle, in the form of an ellipse, or more rarely a setting of four stones laid on an arc of a circle. The type varies from region to region.
- **Dolmen:** This is a type of megalith which is made in single chamber tomb, usually consisting of three or more upright stones supporting a large flat horizontal capstone.
- **Cist:** A cist or kist was used as encasements for dead bodies. These types of burials were completely underground. There were single- and multiple-chambered cists.

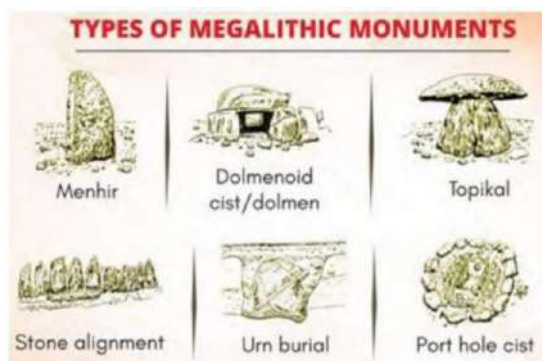


Fig: Cist

Material Remains

- The megalithic people were in the habit of interring **burial goods along with mortal remains**.
- These can be broadly categorized as **ceramic, iron and copper artefacts, beads of various raw materials, gold & silver ornaments, terracotta objects**, objects of art and miscellaneous objects.
- **Roman coins have been found in some megalithic burials** in Tamil Nadu and Kerala.
- Megalithic culture finds several references in ancient **Tamil Sangam literature**.
- For instance, **menhirs are referred to as nadukal**. Ancient Sangam texts lay out, in detail, a step-by-step procedure for laying a memorial stone or nadukal in honour of a fallen hero.
- **Manimekalai** (5th century AD), the famous Buddhist epic, refers to the various kinds of Megalithic burials.

- The Megalithic burial sites of **Junapani on Nagpur-Katol Road**, Maharashtra are the largest number of stone circles in the country- Archaeological Survey of India (ASI)

KUMBH MELA

GS-I CULTURE & HERITAGE

Context

- Recently, KumbhMela was held in Haridwar after a gap of 11 years.

About

- KumbhMela is a major pilgrimage and festival in Hinduism.
- It is celebrated in a cycle of approximately 12 years.
- The festival is traditionally credited to the 8th-century Hindu philosopher and **saintAdiShankara**, as a part of his efforts to start major Hindu gatherings for philosophical discussions and debates along with Hindu monasteries across the Indian subcontinent.
- KumbhMela has been included in the **UNESCO's representative list 'Intangible Cultural Heritage of Humanity'**.

Sites of observance

- Sites of observance rotate between four pilgrimage places on four sacred rivers:
 1. KumbhMela in **Haridwar** on the Ganges in Uttarakhand
 2. KumbhMela in **Ujjain** on the Shipra River in Madhya Pradesh
 3. KumbhMela in **Nashik** on the Godavari River in Maharashtra
 4. KumbhMela in **Prayagraj** at the confluence of Ganga, Yamuna, and Saraswati in Uttar Pradesh.
- Each site's celebration is based on a distinct set of **astrological positions of the Sun, the Moon, and Jupiter**, the holiest time occurring at the exact moment when these positions are fully occupied.

Attractions

- The KumbhMela at Prayag, in particular, attracts millions of pilgrims.
- The festival is marked by a ritual dip in the waters, but it is also a celebration of community commerce with numerous fairs, education, religious discourses by saints, mass feedings of monks or the poor, and entertainment spectacle.
- The seekers believe that bathing in these rivers is a means to penance for past mistakes, and that it cleanses them of their sins.

Types of KumbhMela

There are five types of KumbhMelas which are held in India:

MahaKumbhMela

- It comes once in every 144 years after 12 PurnaKumbhMelas.
- MahaKumbh is held **only in Prayagraj**.
- It was last held in 2013 and now will be held 144 years later.
- It is believed that taking a dip in the Ganges during MahaKumbh; one can relieve themselves and their ancestors back to the eighty-eighth generations from all evils and sins.

PurnaKumbhMela

- This is held after every 12 years in Allahabad. Millions of devotees take a bath in the Ganges during this fair.

ArdhKumbh

- ArdhKumbh is celebrated after every six years and marks the halfway between the celebrations of PurnaKumbh which is celebrated every 12 years.
- It is held only in Prayagraj and Haridwar.

KumbhMela

- KumbhMela is held in 4 different places-Ujjain, Nashik, Prayagraj, and Haridwar.
- The astrological positions of the Sun and Jupiter decide in which city the mela would be held.

Magh (KumbhMela)

- The MaghMela is of utmost importance for the Hindus because they link the origin of the MaghMela with the creation of the universe.
- This mela is held every year on the TriveniSangam (confluence of Ganga, Yamuna and the mystical Saraswati).
- It is organized in the Magh month of the Hindu Calendar.

Astrological Significance

- Every twelfth year when **Jupiter enters the Aries constellation** on the day of the new moon in the month of Magh, as per the Hindu Calendar, Kumbh is celebrated.
- The event of Kumbh takes place in the four destinations as per the following astrological positions-
 - When Jupiter moves into the Aquarius constellation and the Sun to the Aries constellation, Kumbh is held in Haridwar.
 - When Jupiter moves into Leo constellation, it is held at Nashik.
 - When Jupiter enters Leo constellation and Sun enters Aries constellation, Kumbh takes place in Ujjain.
 - When Sun is in Capricorn constellation and Jupiter in Taurus constellation, the KumbhMela is in Prayagraj.

Social Significance

- It is the only event of the world which requires no invitation, and yet millions of pilgrims come for this mega event.
- KumbhMela also gives forth a **social message** which is of the **welfare of all human beings, sharing of noble thoughts and maintaining and strengthening of relationships**.
- The chanting of mantras, holy elucidations, traditional dances, devotional songs, and mythical stories bring the people together thus reflecting Kumbh's social significance.

Conclusion

- The KumbhMela is an **amalgamation of the science of astronomy, astrology, spirituality, traditions, rituals and socio-cultural practices**, making it one of the richest festivals in the world.

JAINISM

GS-I ANCIENT HISTORY

Context

- Recently, the birth anniversary of 24th and last Jain Tirthankar Bhagwan Mahavir was celebrated across the country.

Note: In this article, points which are mostly not mentioned in standard books will be covered. Please go through the basics of the topic like Life of Mahavira from Ancient History Book.

Jainism

- Ancient Religion and its name derives from the word **Jina**, meaning 'liberator' or 'victor', referring to spiritual rather than material conquest.
- Jains revere a group of **24 liberated souls called Jinas or Tirthankaras** who act as teachers and role models to the faithful.
- Jain Canonical was established at the Council of Valabhi, **presided over by Devardhi** around 454 C.E.

- Jains consider the primary scripture to be the **Tattvartha Sutra**, or Book of Realities, written over eighteen centuries ago by the **monk-scholar Umasvati (also known as Umasvami)**.
- Jainism does not accept the authority of the Veda.

Sects

- Jainism has two main variants: Digambar (the naked) and Shvetambar (wearers of white cloths).

Origin

- The two major sects of Jainism, Digambar and Shvetambar, trace their origin to events that occurred about **two hundred years after the nirvana of Mahāvīr**.
- Bhadrabahu, chief of the Jain monks, foresaw a period of famine and led about 12,000 people to southern India.
- Twelve years later, they returned to find that the Svetambar sect had arisen.
- The **followers of Bhadrabahu became to be known as the Digambar sect**.
- There was **no clear division until the 5th century, when the Valabhi council** of 453 resulted in editing and compilation of scriptures of the Svetambar tradition.

Name of Tirthankara	Symbol	Place of Nirvan
1. Lord Rishabha	Bull	Ashtapad(Kailasha)
2. Ajitnath	Elephant	Samet Sikhar
3. Sambhavanath	Horse	Samet Sikhar
4. Abhinandannath	Monkey	Samet Sikhar
5. Sumatinath	Red Goose	Samet Sikhar
6. Padmaprabha	Lotus	Samet Sikhar
7. Suparshvanath	Swastika	Samet Sikhar
8. Chandraprabha	Moon	Samet Sikhar
9. Pushpadanta	Crocodile	Samet Sikhar
10. Sheetalnath	Kalpavriksha	Samet Sikhar
11. Shreyansanath	Rhinoceros	Samet Sikhar
12. Vasupujya	Female buffalo	Chappapuri
13. Vimalnath	Pig	Samet Sikhar
14. Anantnath	Porcupine	Samet Sikhar
15. Dharmanath	Vajra	Samet Sikhar
16. Shantinath	Deer	Samet Sikhar
17. Kunthunath	Goat	Samet Sikhar
18. Aranath	Fish	Samet Sikhar
19. Mallinath	Kalasa	Samet Sikhar
20. Munisuvrata	Tortoise	Samet Sikhar
21. Nami Natha	Blue-Water Lily	Samet Sikhar
22. Neminaatha	Conch	Mount Girnar
23. Parshva	Snake	Samet Sikhar
24. Mahavira	Lion	Pava Puri

Difference between Svetambara and Digambara:

(1) Liberation of Woman:

- Digambara believes that **women cannot achieve nirvana or liberation directly**. They first have to reborn as a man for this.
- Svetambara, on the other hand, have a different opinion. According to them, **women are equally capable of achieving liberation as a man**. They believe in **Sabastra Mukti**.
- They believe that anybody can achieve salvation, be it a householder or a monk.

(2) Dress Code:

- Digambara believes that in order to achieve nirvana or liberation, one must **renounce everything including clothes**. Therefore Digambara monks are completely naked.
- Svetambara, on the contrary, believes that **practice of nudity is not essential to attain liberation**. Therefore they wear white clothes.

(3) Possessions:

- Digambara monks are not allowed to have any kind of possessions.
- They believe that it is necessary to renounce everything to lead the life of a true monk.
- However, they usually carry three things with them:
 - Picchi** – broom made up of fallen feathers of a peacock. They use this broom to remove small insects without harming them.
 - Kamandalu** – oblong water pot used for carrying pure and sterilized drinking water.
 - Shastra** – scriptures.
- Svetambara monks are allowed to possess 14 specified things, which include:**
 - White clothes
 - Rajoharana – broom made up of soft white wool attached to a wooden handle. Using this they remove small insects from their path without harming them.

- Begging bowl
- Books etc.

(4) Idols:

- Svetambara idols of Tirthankars are decorated with jewels, wearing loincloth with prominent staring eyes.
- However, Digambara idols are naked, undecorated with downcast eyes.

(5) Scriptures:

- In Jainism, the discourse delivered by Tirthankaras is known as **ŚhrutJnāna**. It comprises of 11 Angas and 14 Purvas.
- Digambara holds the opinion that original texts of Jainism were lost ago.
- Svetambara believe that they have the original Jain scriptures. However, they also accept that their collection is also incomplete.
- **Tattvartha Sutra** is the most authoritative text in Jainism, accepted by both Svetambara and Digambara.

Jain Literature

- Jain literature is classified into two major categories:

Agam Literature

- This consists of original scriptures compiled by **Gandharas and Srut-kevalis**.
- They are written in the **Prakrit language**.

Non-agam Literature

- This consists of **commentary and explanation of Agam literature** and independent works, compiled by elder monks, nuns, and scholars.
- They are written in many languages such as **Prakrit, Sanskrit, Old Marathi, Gujarati, Hindi, Kannad, Tamil, German, and English**.

Agam Literature

- Lord Mahavir's preaching was methodically compiled by his followers into many texts.
- These texts are collectively known as Agams, the sacred books of the Jain religion.
- Hence, the Jain religion does not have one sacred book like the Bible or Koran, but it has many books compiled by many followers.

There are 41 Sutras, including 11Angas, 12 Upāngas, five Chedas, five Mūlas, and eight miscellaneous works; a number of Prakirnakas (unclassified works); 12 Niryuktis (commentaries); and the Mahābhāṣya, or great commentary.

Agam literature is also divided into two groups

- **Ang-agams or Ang-pravista-agams:** These texts contain the direct preaching of Lord Mahavir. They were compiled by **Ganadharas**.
- **Ang-bahya-agams (outside of Ang-agams):** These texts are expansions of Ang-agams. They were compiled by **Srut-kevalis**.

1. Ang-agams

- Lord Mahavir's immediate disciples were known as **Ganadharas**.
- All **Ganadharas possessed perfect knowledge (keval-jnan)**.
- They orally compiled the direct preaching of Lord Mahavir into twelve main texts (sutras). These texts are known as **Ang-agams**.
- Hence the Ang-agams are the **oldest religious scriptures and the back bone of Jain literature**.
- The **twelfth Ang-agam is called Drastivad**. The Drastivad consists of fourteen Purva texts, also known as Purvas or Purva-agams.
- Among Ang-agams, **Purvas were the oldest sacred texts**.
- All Jain sects believe that knowledge of the Purvas (Drastivad) were gradually lost starting two hundred years after Lord Mahavir's nirvan (death).
- However, the subject matter of the Purvas has been referenced by other Jain scriptures and literature.

2. Ang-bahya-agams

- Monks who had knowledge of a **minimum of ten Purvas** were known as **Srut-kevlis**.
- The **Srut-kevlis** wrote many texts (sutras) expanding the subject matter defined in the Ang-agams.
- Collectively these texts are called **Ang-bahya-agams** meaning **outside of Ang-agams**.
- The **different Jain sects accept different numbers of Ang-bahya texts**.
- However the Digambar sect believes that they were also gradually lost starting about two hundred years after Lord Mahavir's Nirvan.

Classification of Ang-bahya-agams:

- The Svetambar sect has divided Ang-bahya-agams into the following categories:
 1. **Upang-agams:**
 - The scriptures which provide further explanation of Ang-agams are called Upang-agams. There are 12 Upang-agams accepted by all Svetamber sects.
 2. **Chhed-sutras:**
 - The subject matter described in Chhed-sutras is only for monks and nuns and not for lay people. It **relates to the conduct and behavior of monks and nuns**.
 3. **Mool-sutras:**
 - The scriptures which are essential for monks and nuns to study in the earlier stages of their monkhood are called Mool-sutras.
 4. **Chulika-sutras or Sutras:**
 - The scriptures which enhance or decorate the Ang-agams are known as Chulika-sutras or Sutras.
 5. **Prakirna-agams:**
 - The scriptures which describe independent or miscellaneous subjects of the Jain religion are known as Prakirna-sutra.

In a nutshell,

12 Angas (canonical texts of Jainism based on Mahavira's teachings)

Ācāraṅgāsūtra
Sūtrakṛtāṅga
Sthānāṅga
Samavāyāṅga
Vyākhyāprajñapti or Bhagavatisūtra
Jñātrdhārmakathāh
Upāsakadaśāh
Antakṛddaaśāh
Anuttaraupapātikadaśāh
Prašnavyākaranani
Vipākāśruta
Drstivāda

12 Upanga Agams: Upanga Agamas are explanations to Angas

6 Chedasutras: These are texts related to behavior of Monks and Nuns.

4 Mūlasūtras: These are texts which provide a base in the earlier stages of the monkhood

10 Prakīrnakasūtras: These are texts on Independent or miscellaneous subjects

2 Cūlikasūtras: These are texts which further enhance or decorate the meaning of Angas.

Theory of Knowledge

- The Jains classify knowledge into **immediate (aparokṣa)** and **mediate (parokṣa)** knowledge.

Mediate Knowledge

There are two types of mediate knowledge:

1. Mati, ordinary cognition based on normal sense perception.

- This includes remembrance (smirti); recognition (samjñā, prtyabhiñā); induction based on observation (curita, tarka); and deductive reasoning (abhinibodha, anumāna).
- Mati is sometimes distinguished into three types: perception (upalabdhi), memory (bhāvanā), and understanding (upayoga). Mati is knowledge acquired by means of the senses (indriyas) and the mind (anindriya), and is always preceded by some kind of perception.

2. Shruta, or Sruti, knowledge derived through signs, symbols or words.

- Mati gives knowledge by acquaintance; sruti gives knowledge by description. There are four kinds of shruta: association (labhdi), bhavana (attention), understanding (upayoga), and aspects of the meaning of things (naya).

Immediate Knowledge

- Immediate knowledge is categorized into three types:
 1. **Avadhi**, clairvoyance, or direct knowledge of things through time and space.
 2. **Manahparyāya**, telepathy, direct knowledge of the thoughts of others.
 3. **Kevala**, omniscience unlimited by time or space, perfect knowledge comprehending all substance and their modifications. This knowledge can only be felt and not described, and is possible only for purified souls free from bondage.
- These five types of knowledge (2 mediate & 3 immediate) are “**right knowledge.**”
- There are also three types of “**wrong knowledge:**”
 - doubt (samshaya),
 - mistake (viparyaya), and
 - wrong knowledge through indifference (anadhyavasaya).
- Only one of these eight kinds of knowledge is active at a given moment.
- Knowledge of a particular thing is also divided into two types:
 - knowledge of a thing as it is (pramāna) and
 - knowledge of a thing in its relation to other things (naya).
- Naya is the viewpoint from which a statement is made about a thing. It includes partial knowledge about the innumerable aspects of a thing, and judgment based on this partial knowledge.

Philosophy

Realistic Pluralism (Anekantavada)

- Jain metaphysics is a realistic and relativistic pluralism.
- Matter (pudgala) and spirit (jiva) are seen as separate and independent realities.
- There are **innumerable material atoms**, and **innumerable individual souls**, and each of these possesses an infinite number of characteristics of its own.
- Every object possesses innumerable positive and negative characteristics.
- The substance (dravya) of a thing possesses all its qualities and modes.
- The permanent and essential qualities of a substance are called attributes (guna), and the changing and accidental qualities are called modes (paryāya).

Relativity of Knowledge (Syadvada)

- An ordinary person cannot know all the qualities of a particular thing.
- **The nature of reality is indeterminate and infinitely complex**, and human knowledge of it at any given moment is necessarily limited to only certain aspects.
- The infinite aspects of reality are **all relative**; therefore **all judgments are relative, conditional and limited**.
- It is incorrect to say that anything is absolutely true or absolutely untrue.

Ethics

- Monks and nuns strive to make this birth their last by practicing severe asceticism, while the lay people pursue less rigorous practices, striving to attain rational faith and do good deeds in this birth.

- The Five Vows of the monastics are called Great Vows (mahavrata) and those of the laity are called Small Vows (anu-vrata).
- **The Five Vows are:**
 - Non-violence (ahimsa, or ahimsa)
 - Truth (satya)
 - Non-stealing (asteya)
 - Chastity (brahmacharya)
 - Non-possession or Non-possessiveness (aparigraha)

Three Jewels of Jainism

- The aim of Jain life is to achieve liberation of the soul.
- This is done by following the three jewels of Jain ethics.
 - Right faith - Samyak darshana
 - Right knowledge - Samyak jnana
 - Right conduct - Samyak charitra

Holy Sites

- There are many Jain tirthas (pilgrimage sites) throughout India since the construction of a temple was thought to contribute to liberation from karma. Also included in the following list are significant sites in other countries.
 - **Shravanabelagola**, monumental statue of the Jain saint Gomateshwara in Hassan District, Karnataka
 - **Dilwara Temples**, complex of white marble Jain temples on Mount Abu, Rajasthan
 - **Ranakpur Temples**, extensive complex of white marble Jain temples in Ranakpur, Rajasthan
 - **Palitana**, most visited Jain temple in Gujarat
 - **Bawangaja**, a complex of Jain temples and monumental statues in Barwani District, Madhya Pradesh
 - **Gwalior's fort, huban, Bihar**, has a series of temples on mountains where the Tirthankaras got KevalGyan
 - The **BhagwanAdinathderasar** at Vataman near Ahmedabad
 - **Bajrangarh, Atisaya-kshetra** in Guna district in Madhya Pradesh
 - **Kundalpur, Siddha-kshetra** having 63 temples, famous for beautiful statue of Bade Baba in Damoh district in Madhya Pradesh
 - The **Jain Centre in Leicester, England**, the first Jain temple consecrated in the western world
 - **Siddhachalam in Blairstown**, New Jersey, founded in 1983.

Do you know?

Jain community makes for **4.5 million or 0.36 percent of the Indian population as per 2011 census**, the sixth community to be designated this status as a "national minority", after Muslims, Christians, Sikhs, Buddhists and Parsis.

JYOTIBA PHULE

GS-I MODERN HISTORY

Context

- Recently, the birth anniversary of JyotibaPhule was celebrated.

Contributions

Social

- In 1860, Jotiba with his wife SavitriBaiPhule founded the orphanage for widows, which greatly helped the destitute women.
- He wrote about **caste-based slavery** in one of his books, dedicating it to the **African American movement** in the US against slavery.
- Phule was a **staunch opponent of child marriage and also encouraged widow remarriage** as he recognized that these were ways of subordinating women.
- He ran a campaign for widow remarriage and **opened up an infanticide prevention centre in 1863**, which acted as a safe space where pregnant widows could give birth and stay to take care of their babies.
- In 1873, Jotiba founded the **SatyaShodhakSamaj** with the objective of securing human rights and social justice for the Dalits and the untouchables.

- He was **against Sati and child marriages**.
- He always **agitated for better living conditions for the workers in the mills in Bombay** as well as for the farmers, a majority of whom were untouchables.

Jyotiba Phule was deeply inspired by the book **“The Rights of Man”** written by **Thomas Paine**. After reading it, he came to the conclusion that the only way to emancipate and uplift oppressed minorities was through education.

Education

- Jyotiba Phule had expressed his views on primary education and primary school teachers to the Hunter Commission.
- In his view, it was necessary to bestow **prime importance to primary rather than higher education** as it was the urgent need of the masses.
- He was **in favor of Western education** and demanded **free and compulsory primary education**—up to the age of 12.
- He advocated **technical education for the lower classes**. He also wanted education to be imparted to the children in rural areas.
- He opened three schools for Scheduled Castes such as Mahar and Mangwhich were:
 - (1) A girls' school at Budhwar Peth (1851)
 - (2) A school at Rasta Peth (1851)
 - (3) A school at Vital Peth (1852)

Major Works

- Tiritiya Ratna
- Brahmananche Kasab
- Gulamgiri
- Shetkaryacha Aasud
- Satsar
- Powada : Chatrapati Shivaji Maharaj Bhosle Yancha (Life of Shivaji)
- Manav Mahamand (Muhammad) (Abhang)
- Ishara
- Saravajanik Satyadharma Pustak
- In all he worked for achieving his motive i.e., universal education, education for women and uplift of people who were ostracized by the caste system.

Relevance of Jyotiba's Educational Philosophy Today

- Today education has been mostly reduced to information transmission.
- There is always a fear of examination because of bookish education.
- But for Phule knowledge was not just information.
- It involves questioning, understanding, critiquing and interpreting knowledge.
- As early as in the 19th century Phule had given alternative education models.
- For him, **‘Education is the power to think clearly, the power to act well in the world's work, and the power to appreciate life’**.
- For Phule knowledge matters because it can question, change and transform the individual and society. Education can empower and make society more democratic.
- It can help in reconstructing, rethinking and in interpreting tradition.
- This thought of Phule is extremely relevant in the paradoxical context of caste in contemporary India- where despite of modern education and constitutional provisions, caste discrimination is widespread.

RAMANUJACHARYA & INDIAN SCHOOLS OF PHILOSOPHY

GS-I CULTURE & HERITAGE

Context

- Recently, India paid tributes to the great philosopher, saint & social reformer, Shri Ramanujacharya on his Jayanti.

Ramanujacharya's Contribution

- His philosophical foundations for devotionalism were **influential to the Bhakti movement**.
- Ramanuja's guru was **YādavaPrakāśa**, a scholar who was a part of the more ancient **AdvaitaVedānta** monastic tradition.
- But he disagreed with his Guru. Ramanuja is famous as the **chief proponent of Vishishtadvaitasubschool of Vedānta**.
- His theories assert that **there exists a plurality and distinction between Ātman (soul) and Brahman (metaphysical, ultimate reality)**.
- He also affirmed that there is unity of all souls and that the individual soul has the potential to realize identity with the Brahman.
- Ramanuja presented the importance of Bhakti, or the devotion to a personal God (**Vishnu in Ramanuja's case**) as a means to spiritual liberation.
- His Vishishtadvaita (qualified non-dualism) philosophy has competed with the Dvaita (theistic dualism) philosophy of Madhvāchārya, and Advaita (non-dualism) philosophy of ĀdiShankara. Together these three are most influential Vedantic philosophies of the 2nd millennium.

Basics of Indian Philosophy

- Indian Philosophy**, refers to any of several traditions of philosophical thought that originated in the **Indian subcontinent**, including **Hindu philosophy**, **Buddhist philosophy**, and **Jain philosophy**.
- It is considered by Indian thinkers to be a **practical discipline**, and its goal should always be to **improve human life**.

Orthodox Schools

- The main **Hindu** orthodox (**astika**) schools of Indian philosophy are those codified during the medieval period of **Brahmanic-Sanskritic scholasticism**, and they take the ancient **Vedas** (the oldest sacred texts of Hinduism) as their source and scriptural authority:

1. Samkhya(Kapila Muni)

- Samkhya is the **oldest of the orthodox philosophical systems**, and it postulates that everything in reality stems from **purusha** (self or soul or mind) and **prakriti** (matter, creative agency, energy).
- It is a **dualist** philosophy i.e. **between the self and matter**.
- Liberation occurs with the realization that the soul and the **dispositions of matter** (steadiness, activity and dullness) are different.

2. Yoga (Patanjali)

- The Yoga school, as expounded by **Patanjali** in his 2nd Century B.C.
- Yoga Sutras**, accepts the Samkhya psychology and metaphysics.
- But it is more **theistic**, with the gradual addition of a divine entity to Samkhya's twenty-five elements of reality.
- The relatively brief Yoga Sutras are divided into eight **ashtanga** (limbs), reminiscent of Buddhism's Noble Eightfold Path, the goal being to quiet one's mind and achieve **kaivalya** (solitariness or detachment).

3. Nyaya (Gautama Muni)

- The Nyaya school is based on the **Nyaya Sutras**, written by **Aksapada Gautama** in the 2nd Century B.C.

- Its methodology is based on a **system of logic** that has subsequently been adopted by the majority of the Indian schools.
- Its followers believe that **obtaining valid knowledge** (the four sources of which are **perception, inference, comparison and testimony**) is the only way to gain release from suffering.
- Nyaya developed several **criteria** by which the knowledge thus obtained was to be considered **valid or invalid**.

4. Vaisheshika (Kanada)

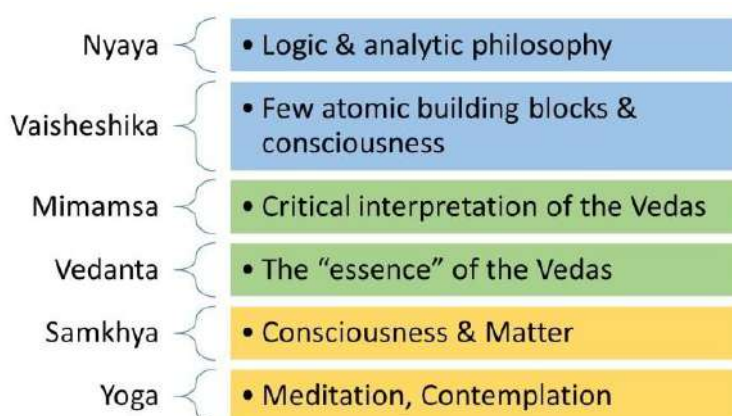
- The Vaisheshika School was founded by **Kanada** in the **6th Century B.C.**, and it is **atomist** and **pluralist** in nature.
- The basis of the school's philosophy is that **all objects in the physical universe are reducible to a finite number of atoms**.
- **Brahman** is regarded as the fundamental force that causes **consciousness** in these atoms.
- The Vaisheshika and Nyaya schools eventually merged because of their **closely related metaphysical theories** (although Vaisheshika only accepted **perception** and **inference** as sources of valid knowledge).

5. PurvaMimamsa (Jaimini)

- The main objective of the PurvaMimamsa school is to **interpret** and **establish the authority** of the Vedas.
- It requires **unquestionable faith in the Vedas** and the regular performance of the Vedic **fire-sacrifices** to sustain all the activity of the universe.
- Although in general the Mimamsa accepts the **logical and philosophical teachings** of the other schools, they insist that **salvation** can only be attained by acting in accordance with the **prescriptions of the Vedas**.
- The school later shifted its views and began to teach the doctrines of **Brahman** and **freedom**, allowing for the release or escape of the soul from its constraints through **enlightened activity**.

6. Vedanta

- The Vedanta, or **UttaraMimamsa**, school concentrates on the philosophical teachings of the **Upanishads** (mystic or spiritual contemplations within the Vedas), rather than the **Brahmanas** (instructions for ritual and sacrifice).
- The Vedanta focus on **meditation, self-discipline and spiritual connectivity**, more than traditional ritualism.
- The school is separated into **six sub-schools**, each interpreting the texts in its own way and producing its own series of sub-commentaries:
 - **Advaita (AdiShankara)**- It holds that the soul and Brahman are one and the same.
 - **Visishtadvaita (Ramanuja)** - which teaches that the Supreme Being has a definite form, name - Vishnu - and attributes),
 - **Dvaita (Madhvacharya)** - espouses a belief in three separate realities: Vishnu, and eternal soul and matter,
 - **Dvaitadvaita(Nimbarka)** -holds that Brahman exists independently, while soul and matter are dependent,
 - **Shuddhadvaita (Vallabhacharya)** - believes that Krishna is the absolute form of Brahman and both God and the individual self are the same, and not different.
 - **Acintya BhedaAbheda (ChaitanyaMahaprabhu)**-combines monism and dualism by stating that the soul is both distinct and non-distinct from Krishna, or God).



Heterodox schools

- The main heterodox (**nastika**) schools, which do not accept the authority of the Vedas, include:

1. Carvaka

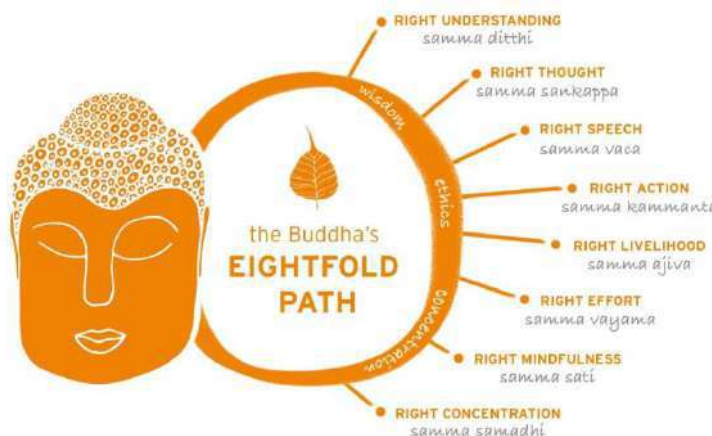
- Also known as **Lokayata**, Carvaka is a **materialistic, skeptical and atheistic** school of thought.
- It **rejected the notion of an afterworld, karma, liberation (moksha), the authority of the sacred scriptures, the Vedas, and the immortality of the self.**
- It is the **philosophy of Eat, Drink & Be merry.**
- Its founder was Carvaka, author of the **Barhaspatya Sutras** in the final centuries B.C., although the original texts have been **lost**.
- In 5th Century, **Saddaniti** and **Buddhaghosa** connected the Lokayatas with the **Vitandas** (or Sophists), and the term **Carvaka** was first recorded in the **7th Century** by the philosopher **Purandara**.

2. Buddhist philosophy

- Buddhism** is a non-theistic system of beliefs based on the teachings of **Siddhartha Gautama**, later known as the **Buddha**, in the 5th Century B.C.
- The **question of God is largely irrelevant** in Buddhism, and it is mainly founded on the **rejection** of certain orthodox **Hindu philosophical concepts**.
- Although it does share some philosophical views with Hinduism, such as belief in **karma**.
- Buddhism advocates a **Noble Eightfold Path** to end suffering, and its philosophical principles are known as the **Four Noble Truths**.
- Buddhist philosophy deals extensively with problems in **metaphysics, phenomenology, ethics** and **epistemology**.

Four Noble Truths

- **Symptoms: The Nature of Suffering (*Dukkha*)**
– To live is to suffer
- **Cause/Diagnosis: Suffering's Origin (*tanha*)**
– Suffering is caused by desire
- **Possibility of Cure/Prognosis: Suffering's Cessation**
– Suffering can be overcome
- **Prescription: The Way Leading to the Cessation of Suffering**
– The Noble Eightfold Path is the solution to suffering



3. Jain Philosophy

- The central tenets of Jain philosophy were established by **Mahavira** in the **6th Century B.C.**, although Jainism as a religion is much older.
- A basic principle is **anekantavada**, the idea that **reality is perceived differently** from different points of view, and that no single point of view is completely true.
- According to Jainism, only **Kevalis**, those who have infinite knowledge, can know the true answer, and that all others would only know a **part of the answer**.
- It stresses **spiritual independence** and the **equality of all life**, with particular emphasis on **non-violence**, and posits **self-control** as vital for attaining the realization of the soul's true nature.
- Jain belief emphasizes the **immediate consequences of one's behavior**.

SUGARCANE INDUSTRY

GS-I GEOGRAPHY

Context

- Payment arrears from sugar mills to cane farmers went up to Rs 23,000 crore.

Historical Background

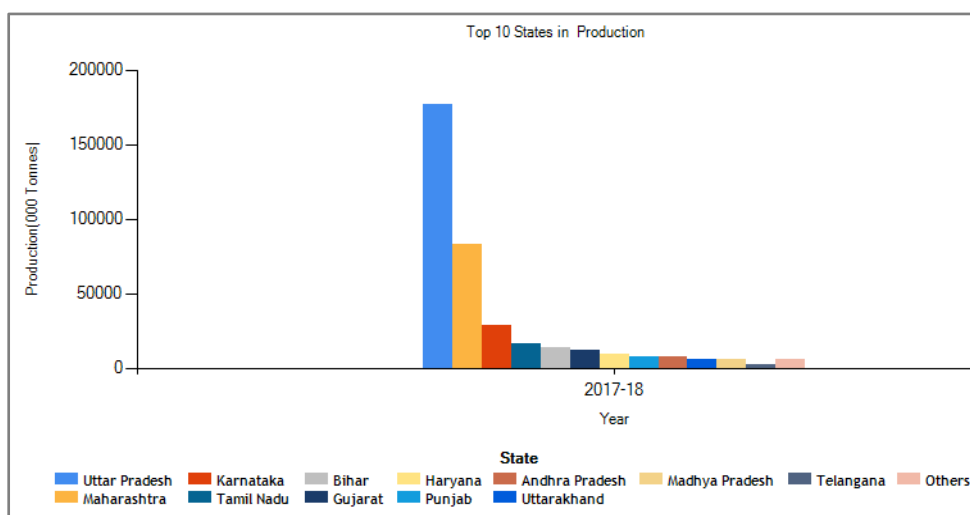
- India has a long tradition of manufacturing sugar.
- References of sugar making by the Indians are found even in the **Atharva Veda**.
- India is rightly called the **homeland of sugar**. But in ancient times, gur and khandsari were made.
- Also, Cane was cut in pieces - crushed under heavy weight - juice thus obtained was boiled and stirred, till it turned solids.
- Solids of uneven shape and size were called **sarkaran**, a **Sanskrit term of 'gravel'**.
- Modern word '**sugar**' is derived from the word **Sarkara**.
- Thus, India has been the original home for sugarcane as well as sugar manufacture.
- Modern sugar industry came on the Indian scene only in the middle of the 19th century, when it was introduced by the Dutch in North Bihar in about 1840.

Legislations

- "**Sugar Industry Protection Act**" was passed by the Indian Legislature in 1932.
- Under this act, protection was granted to the indigenous sugar industry.
- With enforcement of Sugar Protection Act, within a period of four years country became self-sufficient in sugar by 1935.

Geographical Distribution of Sugar Industry in India

- Uttar Pradesh:** It is the leading producer of sugar in India and one of the largest sugar industries in the Indian economy.



Indian Production of Sugarcane		Production(000 Tonnes)	
State	2017-18	Production	Share(%)
Uttar Pradesh		177,060.00	46.98
Maharashtra		83,130.00	22.06
Karnataka		28,260.00	7.50
Tamil Nadu		16,540.00	4.39
Bihar		13,980.00	3.71
Gujarat		12,050.00	3.20
Haryana		9,630.00	2.56
Punjab		8,020.00	2.13
Andhra Pradesh		7,950.00	2.11
Uttarakhand		6,300.00	1.67
Page Total		362,920.00	

- **Bihar, Punjab, Haryana, Maharashtra, Karnataka**
- **Tamil Nadu:** This state is responsible for 10% of the total sugar production in India.
- **Andhra Pradesh:** Along with Sugar Production it is regarded as the '**granary of the south**' and once it was called as '**Rice Bowl of India**'.

World Trade (2019)

Largest Exporter

10 LARGEST PRODUCERS		
(in mln metric tonnes)		
1	India	29.66
2	Brazil	29.17
3	EU-28	16.65
4	Thailand	14.05
5	China	10.57
6	USA	7.22
7	Russian Fed.	7.20
8	Mexico	6.18
9	Pakistan	5.33
10	Australia	4.25

Largest importer

TOTAL		
1	Brazil	17.89
2	Thailand	10.41
3	India	4.02
4	Australia	2.71
5	Mexico	2.34
6	Guatemala	2.06
7	South Africa	0.89
8	Eswatini	0.79
9	Cuba	0.62
10	Pakistan	0.62

TOTAL		
1	China	4.25
2	Indonesia	4.12
3	USA	2.82
4	Bangladesh	2.17
5	Algeria	1.89
6	Malaysia	1.78
7	Korea, Rep. of	1.66
8	Nigeria	1.36
9	Iran	1.33
10	Sudan	1.29

North India vs. South India Sugar Industry (Why sugar industry is shifting from North to South)

- A brief description of differences between the sugar industry of the northern and peninsular India is given below:
 1. Peninsular India has tropical climate which **gives higher yield per unit area** as compared to north India.
 2. The **sucrose content is also higher in tropical variety** of sugarcane in the south.
 3. The **crushing season is also much longer in the south** than in the north.
 4. For example, crushing season is of nearly four months only in the north from November to February, whereas it is of nearly 7-8 months in the south where it starts in October and continues till May and June.
 5. The co-operative sugar mills are better managed in the south than in the north.
 6. Most of the mills in the south are new which are equipped with modern machinery.

Problems of Sugar Industry

- Sugar industry in India is plagued with several serious and complicated problems which call for immediate attention and rational solutions. Some of the burning problems are briefly described as under:

1. Low Yield of Sugarcane

- Although India has the largest area under sugarcane cultivation, the **yield per hectare is extremely low** as compared to some of the major sugarcane producing countries of the world.
- For example, India's yield is **only 64.5 tones/hectare as compared to 90 tonnes in Java and 121 tonnes in Hawaii**.
- This leads to low overall production compared to capacity or potential.

2. Short crushing season

- Manufacturing of sugar is a seasonal phenomenon with a **short crushing season** varying normally from 4 to 7 months in a year.
- The mills and its **workers remain idle during the remaining period of the year**, thus creating financial problems for the industry as a whole.

3. Fluctuating Production Trends

- Sugarcane has to compete with several other food and cash crops like cotton, oil seeds, rice, etc.
- Consequently, the land available to sugarcane cultivation is not the same and the total production of sugarcane fluctuates.
- This affects the supply of sugarcane to the mills and the production of sugar also varies from year to year.

4. Low rate of recovery:

- The average rate of recovery in India is **less than ten per cent** which is quite low as compared to other major sugar producing countries.
- For example recovery rate is as high as 14-16 per cent in Java, Hawaii and Australia.

5. High cost of Production

- High cost of sugarcane, **inefficient technology, uneconomic process of production** and **heavy excise duty** result in high cost of manufacturing.
- The **production cost of sugar in India is one of the highest** in the world.

6. Small and uneconomic size of mills

- Most of the sugar mills in India are of small size with a capacity of **1,000 to 1,500 tonnes per day**.
- This makes large scale production uneconomic. Many of the mills are economically not viable.

7. Old and obsolete machinery

- Most of the machinery used in Indian **sugar mills**, particularly those of Uttar Pradesh and Bihar is **old and obsolete**, being 50-60 years old and needs rehabilitation.
- But low margin of profit prevents several mill owners from replacing the old machinery by the new one.

8. Competition with Khandsari and Gur

- Khandsari and gur have been manufactured in rural India much before the advent of sugar industry in the organised sector.
- Since khandsari industry is free from excise duty, it can offer higher prices of cane to the cane growers.
- Further, cane growers themselves use cane for manufacturing gur and save on labour cost which is not possible in sugar industry.
- It is estimated that about **60 per cent of the cane grown in India is used for making khandsari and gur** and the organised sugar industry is deprived of sufficient supply of this basic raw material.

9. Regional imbalances in distribution

- Over half of sugar mills are located in Maharashtra and Uttar Pradesh and about 60 per cent of the production comes from these two states.
- On the other hand, there are several states in the north-east, Jammu and Kashmir and Orissa where there is no appreciable growth of this industry. This leads to **regional imbalances** which have their own implications.

10. Low per capita consumption

- The per capita annual consumption of sugar in India is only **16.3 kg as against 48.8 kg in the USA.**, 53.6 kg in U.K., 57.1 kg in Australia and **78.2 kg in Cuba**.
- The world average of about 21.1 kg. This result in low market demand and creates problems of sale of sugar.

11. FRP vs SAP

- The central government declares a min price of sugarcane that called Fair Remunerative Price (FRP) and state Governments have also right to declare their own price which is called State Advisory Price (SAP).
- Generally SAP is more than FRP which pose the **conflict that which is fair price for both farmers and mills**.

12. Falling Sugar Prices

- According to the Indian Sugar Mills Association, the FRP of sugarcane rose 50.9% from Rs 139.12 per quintal in 2010-11 to Rs 210 per quintal in 2013-14.
- However, sugar prices fell 21% from Rs 3,765 per quintal in January 2010 to Rs 2,962 per quintal in August 2014.
- Lower margins have made companies heavily dependent on debt.

13. Minimum Distance Criterion

- To ensure decent supply of sugarcane to each sugar mill, the central government has prescribed a minimum radial distance of **15 km between any two sugar mills**.
- But this criterion help to create the **monopoly of mill owner over a large area as 15 km radial distance** is large in number and ultimately led to **exploitation of farmers especially where landholding is smaller**.
- Also this regulation **prohibits innovation and investment by entrepreneurs**.

14. Unpaid dues to Farmers

- India's sugarcane dues accruing to farmers have remained stubbornly high despite. The sugarcane growers are being exploited by not paying their due arrears.
- For instance, in Uttar Pradesh, sugarcane farmers have not been paid for 2020. Further they get 'zero price' receipts for 2021.

15. High Export prices

- Exporting the surplus from India is not easy because of the burden of very high cost of sugarcane, pushing up the costs of sugar.
- For a comparison, Indian cane prices are 70-80% higher than that in Brazil.

Measures to resolve the issues

Implementing Rangarajan Committee Recommendations

- **Removing Distance Norm:** In order to increase competition and ensure a better price for farmers, the Committee recommended that the distance norm be reviewed. Removing the regulation will ensure better prices for farmers and force existing mills to pay them the cane price.
- **Reviewing Revenue Sharing Policy:** States should not declare their own SAP. The pricing shall be done on basis of scientific and economically viable principles. The committee suggested that sharing of revenue generated under sugarcane supply chain shall be divided on basis of 70:30 to farmers and mill owners respectively. This method will be applicable for by products as well. The payment shall be paid to farmers in two installments:
 - ✓ First Floor or FRP should be paid to farmers at time of purchase of sugarcane,
 - ✓ Second, balance should be paid after final price of sugar decided and sold by mill.
 - **Duties:** Import and export duty should not be more than 10%.
 - **Long term agreements:** States should encourage development of market-based long-term contractual arrangements, and phase out cane reservation area.
 - **Exports and Byproducts:** No more outright bans on sugar exports. No restrictions on sale of by-products and prices should be market determined.

Other suggestions

- **Price Rationalization:** Cane-pricing policies need immediate rationalization and brought in tune with global practices, for Indian sugar industry to export the surplus successfully.
- **Ethanol Blending:** The new national policy on Biofuels 2018, expands the scope of raw material for ethanol production by allowing use of Sugarcane Juice. Ethanol production should be promoted. Such diversion will cut oil import bills and bring profits for sugar industry. A win-win situation. Brazil, the world's biggest sugarcane producer, depends on ethanol, and not sugar, as the main revenue source from sugarcane and blends 27 per cent ethanol with petrol.

The new Biofuel Policy 2018 has fixed a target of achieving 20 per cent ethanol blending with petrol by 2030.

- **R&D:** Intense Researches should be funded for developing high yielding, early maturing, frost resistant and high sucrose content varieties of sugarcane.
- **Crushing Season:** Increase the crushing season by sowing and harvesting sugarcane at proper intervals in different areas adjoining the sugar mill. This will increase the duration of supply of sugarcane to sugar mills.
- **Yield:** Intense research is required to increase the sugarcane production in the agricultural field.
- **Production Cost:** Production cost can be reduced through proper utilisation of by- products of the industry.
- For example, bagasse can be used for manufacturing paper pulp, insulating board, plastic, carbon cortex etc. Molasses comprise another important by-product which can be gainfully used for the manufacture of power alcohol.
- **Technology:** There is a dire need of **Technological upgradation** in age old mills to improve efficiency in production.
- **Export promotion:** Tweaking of policies to boost exports when Domestic consumption is less than production.

- **Diversification:** Mills should be incentivized to produce more alcohol and its export should be deregulated. This will improve the economic situation of the mills.
- **SSI:** More steps like **Sustainable Sugarcane Initiative**. SSI provides practical options to farmers for improving the productivity of their land, water and labour, all at the same time. SSI is a set of practices based on principles for producing 'More with Less' in agriculture. Example: Reducing overall pressure on water resources -- Highly relevant for water guzzling Sugarcane crop.

Conclusion

- Mere infusion of capital will not revive the ailing Industry. The need of the hour is to reform the Sugar industry fundamentally but bringing long term solutions and addressing structural issues.

DESERT DUST AND INDIAN SUMMER MONSOON

GS-I GEOGRAPHY

Context

- A new study by University of Kansas has detailed how the Indian Summer Monsoon is supercharged by atmospheric dust particles swept up by winds from deserts in the Middle East.

Dust particles and winds from the Middle East

- When carried by strong winds into the atmosphere, the dust particles from the Middle East absorb solar radiation and become extremely hot.
- The heat from these particles raises the heat of its surrounding environment enough to change air pressure and circulation patterns of the wind.
- This phenomenon is termed an “**elevated heat pump**” that is responsible for driving moisture from the sea to the Indian subcontinent.
- As a result there is increase the precipitation in India.

Positive feedback loops

- It is a loop where the product of a reaction leads to an enhancement of that very reaction.
- In this case too, a positive feedback loop plays a role. When the dust particles boost the power of Indian monsoons, these monsoons increase the winds in the Middle East and subsequently produce more dust aerosols.
- Thus, the monsoon can influence dust emission.

Mechanism

- When we have a stronger monsoon, we have heating in the upper atmosphere.
- The convection associated with the monsoon can go up to a very high elevation, as much as 10 kilometres.
- When this pattern of air over the monsoon is heated, something like a wave is produced.
- These waves have distinct parts facing either high pressure or low pressure and are responsible for transporting air back to the Middle East.
- This air goes downwards and strikes the surface to pick up more dust particles, in turn starting the process again.

Role of the Iranian Plateau

- Another Asian source fueling the impact of aerosolized dust upon the Indian summer monsoons is the Iranian Plateau.
- The Plateau is located between the Middle East and the Tibetan Plateau.
- This region is at a higher elevation which makes it easier for solar radiation to reach its surface and increase its temperature.
- An increase in surface temperature causes lower tropospheric winds to flow towards heated regions away from the colder oceanic regions of the winter hemisphere.

- This leads to an accumulation of hot air above the Iranian Plateau which strengthens the monsoon circulation over the deserts of the Arabian Peninsula.
- Thus, the Iranian Plateau's role in increasing the monsoon circulation as well as monsoon precipitation aids in explaining the relationship between Middle East dust and Indian summer monsoon.

Aerosols and Monsoon

- The study explores the influence of Aerosols in Indian summer monsoon.

An aerosol is a **suspension of fine solid particles or liquid droplets in air or another gas**. Aerosols can be natural or anthropogenic. Examples of natural aerosols are fog or mist, dust, forest exudates and geyser steam. Examples of anthropogenic aerosols are particulate air pollutants and smoke.

- Aerosolized dust can serve as ice-cloud nuclei, also known as the seeds for rain droplets.
- This phenomenon changes the amount or type of precipitation that falls from a cloud and can alter the microphysical properties of ice clouds and consequently the Indian summer monsoon rainfall. Let's see how!

Snow-darkening effect

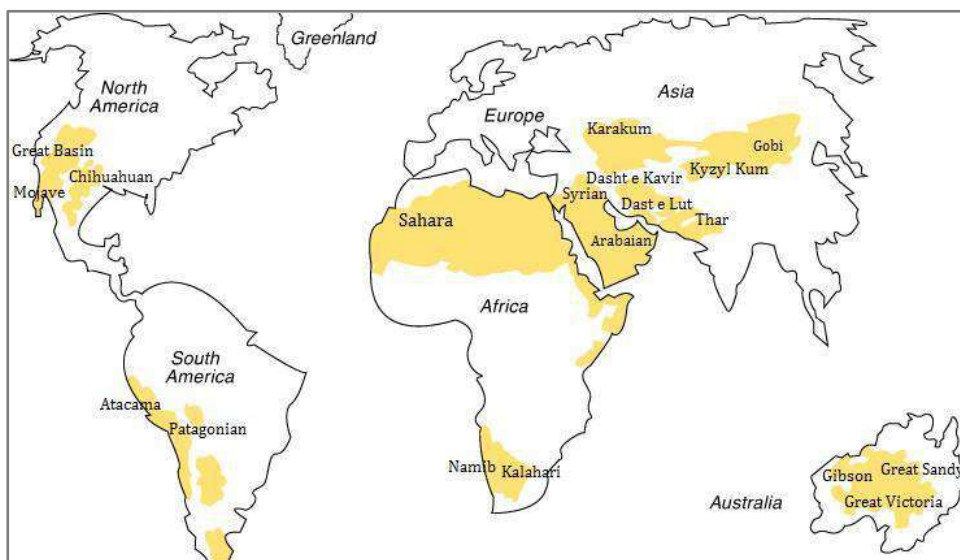
- In snow-darkening effect, black carbon and dust particles suspended in the air—known as aerosols—land in snow-covered regions.
- This in turn darkens the snow, reducing their reflectivity and leading to more absorption of sunlight.
- The process increases the warming of the land and the troposphere above.
- This leads to enhanced low-level southwesterly winds that amplify the dust accumulation over the Himalayas–Indo-Gangetic Plain.
- Increased dust increases precipitation.

Solar-Dimming Effect

- In solar-dimming effect aerosols block the solar radiation from reaching the land surface.
- This causes the surface temperature to cool down which interferes with hydrological processes by reducing evaporation and in turn reducing rainfall.

Final words

- Understanding these mechanisms will prove to be of increasing importance in the face of global climate change.
- This is more significant for Asia as projections forecast that the land will become drier which will amplify dust emissions.
- With air pollution worsening in Indian cities, and as residents try to improve air quality, the ratio between natural dust to anthropogenic aerosols will also increase, prompting dust to play a central role in the future.



Context

- Heat Wave Conditions observed in some pockets over Rajasthan and in isolated pockets over east Vidarbha.

What is a Heat wave?

- A heat wave is a prolonged period of excessive heat, often combined with excessive humidity.

What is criterion for declaring heat wave in India?

- Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains and at least 30°C or more for Hilly regions.
 - Based on Departure from Normal Heat Wave:**
Departure from normal is 4.50°C to 6.40°C Severe Heat Wave: Departure from normal is >6.40degree C
 - Based on Actual Maximum Temperature Heat Wave:**
When actual maximum temperature $\geq 45^{\circ}\text{C}$ Severe Heat Wave: When actual maximum temperature $\geq 47^{\circ}\text{C}$
 - If above criteria met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it declared on the second day.

What is a criterion for describing Heat Wave for coastal stations in India?

- When maximum temperature departure is 4.50°C or more from normal, Heat Wave may be described provided actual maximum temperature is 37°C or more.
- The peak month of the heat wave over India is May.

Impact of Heat Waves

Health

- Heat causes **exhaustion, heat stroke, and death**, especially in vulnerable populations.
- Hot days are also associated with increases in heat-related illnesses including **cardiovascular and respiratory complications, kidney disease**, and can be especially harmful to outdoor workers, children, the elderly, and low-income households.

Productivity

- A hot day can **decrease productivity by as much as 24%** - Research by Economists Tatyana Deryugina and Solomon Hsiang.
- India lost 118.3 billion work hours - the highest for any country - in 2019** due to extreme heat, according to Lancet Countdown report on health and climate change.
- This meant a loss of 111.2 work hours per person in the country.

Cities

- In cities, buildings roads and infrastructure can be heated to 50 to 90 degrees hotter than the air while natural surfaces remain closer to air temperatures.
- The **heat island effect** is most intense during the day, but the slow release of heat from the infrastructure overnight (or an atmospheric heat island) can keep cities much hotter than surrounding areas.
- Rising temperatures across the country poses a **threat to people, ecosystems and the economy**.

Climate

- In extreme temperatures, air quality is also affected.
- Hot days **can increase ozone levels**, which in turn affects NOX levels.
- In addition, greater use of heating and cooling of indoor spaces requires more electricity and, depending on the electricity source, can emit more of other types of pollution, including particulates.
- These increases in ozone and particulate matter can pose serious risks to people, particularly the same vulnerable groups directly impacted by heat mentioned above.

- Increase in Greenhouse gases leads to further Global Warming.
- Heat can exacerbate drought, and hot dry conditions can in turn create wildfire conditions.

Agriculture

- High temperatures at night can be particularly damaging to agriculture.
- Some crops require cool night temperatures, and heat stress for livestock rises when animals are unable to cool off at night.
- Heat-stressed cattle can experience declines in milk production, slower growth, and reduced conception rates.

Energy

- While higher summer temperatures increase electricity demand for cooling.
- At the same time, it also can lower the ability of transmission lines to carry power, possibly leading to electricity reliability issues during heat waves.

Mitigation and Adaptation

- Heat early warning systems and proactive heat wave response plans
- Decreased time spent outdoors during extreme heat events
- Increased use of sun-shielding clothing

Building Resilience

Some strategies include:

- Creating heat preparedness plans, identifying vulnerable populations, and opening cooling centers during extreme heat.
- Installing cool and green roofs and cool pavement to reduce the urban heat island effect.
- Planting trees to provide shade and evapo-transpiration cools the air around trees.
- Pursuing energy efficiency to reduce demand on the electricity grid, especially during heat waves.

Expanding Heat-Wave Action Plan

- **Aim-** To provide a framework for implementation, coordination and evaluation of extreme heat response activities in cities/town in India that reduces the negative impact of extreme heat.
- **Establish Early Warning System and Inter-Agency Coordination** to alert residents on predicted high and extreme temperatures.
- **Capacity building / training programme for health care professionals** at local level to recognize and respond to heat-related illnesses, particularly during extreme heat events. These training programmes should focus on medical officers, paramedical staff and community health staff so that they can effectively prevent and manage heat - related medical issues to reduce mortality and morbidity.
- **Public Awareness and community outreach** - Disseminating public awareness messages on how to protect against the extreme heat - wave through:
Print, electronic and social media and **Information, Education and Communication (IEC) materials** such as pamphlets, posters and advertisements and Television Commercials on Do's and Don'ts and treatment measures for heat related illnesses.
- **Collaboration with non government and civil society** - Collaboration with non-governmental organizations and civil society organizations to improve bus stands, building temporary shelters, wherever necessary, improved water delivery systems in public areas and other innovative measures to tackle Heat wave conditions.

Final Words

- The most important step that needs to be taken on war footing is to take multipronged approach to prevent Global Warming by limiting the rise in temperature **well below 2 degree Celsius as envisaged in the Paris Climate Agreement**. This is the only long term and sustainable solution that can reduce the number of days with Heat Waves in the long run.

Context

- The Centre has informed the Bombay High Court that use of FASTag won't breach a citizen's fundamental right of movement.

Petitioner's argument

- It challenged the decision to make FASTag mandatory for all vehicles for electronic toll collection.
- It also raised questions on the decision to impose penalty on vehicles which don't have a FASTag.
- It raised the concern of obstruction the right to movement.
- It also raised the concern over the possibility of surveillance.

Government argument

- The driving force behind making FASTag mandatory is to ensure smooth flow of traffic at toll plazas across the country.
- Electronic payment would reduce travel time by bringing down lines at toll-payment booths.
- The mandate of using FASTag does not violate a citizen's fundamental right to freedom of movement.
- Government has said that the not only is it a safe and secure way of making payments but use of FASTag would result in fuel savings.

About Fastag

- FASTag refers to an RFID sticker that is digitally scanned and payments are made through electronic means.
- The vehicle has to come close to a boom barrier for the FASTag to be scanned.

Government Policy on Fastag

- It is mandated that all vehicles have FASTag displayed on the front screen
- if a vehicle doesn't have it, it must use the extreme left lane
- It must possibly pay double in cash to move past a toll booth reserved for FASTag.

About Freedom of Movement

- Article 19(1)(d) of The Indian Constitution guarantees to all **Citizens of India** the Right "to move freely throughout the territory of India.
- The freedom of movement has **two dimensions**, viz, internal (right to move inside the country) and external (right to move out of the country and right to come back to the country).
- Article 19 protects only the first dimension. The **second dimension is dealt by Article 21** (right to life and personal liberty).

Grounds of Restrictions

- According to clause (5) of Article 19 of Indian Constitution State may impose reasonable restrictions on the Freedom of movement on two grounds:
 - In the Interest of General Public
 - For the Protection of Scheduled Tribes

Legal Verdict

- *Kharak Singh V. State of UP*, Supreme Court Held that the right to move freely throughout the territory of India means the right of locomotion which connotes the right to move wherever one likes, and however one likes.
- *State of Uttar Pradesh Vs. Kaushalya*, Supreme Court held that the right of movement of prostitutes may be restricted on ground of Public Health and in the interest of Public Morals.

RE-PROMULGATION OF ORDINANCES**GS-II POLITY****Context**

- Recently, the central government has re-promulgated the Commission for Air Quality Management in the National Capital Region and Adjoining Areas Ordinance, 2020.

Data of Ordinances

- In the 1950s, central ordinances were issued at an average of 7.1 per year.
- The number peaked in the 1990s at 19.6 per year, and declined to 7.9 per year in the 2010s. With no reaching to the 16 in 2019 and 15 in 2020, the no of ordinances are raising again.

What are Ordinances

- Ordinances are laws that are promulgated by the President of India on the recommendation of the Union Cabinet.
- For an ordinance to be enforced effectively, it must not be in conflict with any higher law such as state or national law or constitutional provisions.

Constitution Provision regarding Ordinances

- Article 123 of the Constitution of India grants the President certain law-making powers to promulgate ordinances when either of the two Houses of Parliament is not in session.
- The governor of a state can also issue ordinances under Article 213 of the Constitution of India, when the state legislative assembly is not in session.

Limitation on promulgation of ordinances

- The President can only promulgate an ordinance when either of the two Houses of Parliament is not in session.
- The President cannot promulgate an ordinance unless he is satisfied that there are circumstances that require taking 'immediate action'.
- Ordinances must be approved by Parliament within six weeks of reassembling or they shall cease to operate. They will also cease to operate in case resolutions disapproving the ordinance are passed by both the Houses.

Judgements by the Supreme Court on Ordinances**RC Cooper Case 1970**

- President decision to issue ordinance can be challenged on the grounds that immediate action was not required.
- It made ordinance issuing authority subject to judicial review.

DC Wadhwa Case

- It is unconstitutional to re-promulgate ordinances, unless in exceptional circumstances. Ordinances themselves are an exception].
- Ordinances are only to tide over a temporary urgency that the executive resorts to an ordinance.
- But to re-promulgate it is to circumvent the legislature's primacy; it is an underhanded way of prolonging the life of an ordinance.
- Judiciary declared re-promulgation unconstitutional or a "fraud on the Constitution".

Krishna Kumar Singh v State of Bihar

- Supreme Court of India held that re-promulgation of ordinance is a fraud on the Constitution.
- The Court also held that the satisfaction of the President of India under Article 123 and of the Governor under Article 213 while issuing an Ordinance is not immune from judicial review.

Associated Issues with Ordinance route

- Ordinance making route **undermines the law-making process, deprives citizens from articulating their grievances through representatives** in Parliament when the bill is first conceived and tabled.
- Ordinance making power of the **President is extraordinary and issuing of Ordinances** could be interpreted as **against constitutional morality**.
- Ordinances are a **hindrance to personal freedom** and a relic of foreign rule.
- The government has promulgated ordinances on issues that **perhaps did not have the kind of urgency that was claimed**.
- While ordinances are passed as laws subsequently, this too is often done in a hurry — PRS data shows that **only 25% of the bills went to parliamentary committees between 2014 and 2019, compared to 71% between 2009 and 2014**.

Way Forward

- If there are important matters to be dealt with, surely the proper response is to lengthen the parliamentary session and not resort to ordinances.
- They should be only issued in emergency cases with clearly stated reasons of what does the emergency constitute.
- Exception of the Wadhwa case judgement, which allowed re-promulgation from being attacked in the court for legitimate issues should be erased.
- It is the ethical morality of each party to maintain the democratic spirit of the country.

THE TRIBUNAL REFORMS ORDINANCE 2021

GS-II POLITY

Context

- Recently, government has promulgated the Tribunal Reforms (Rationalisation and Conditions of Service) Ordinance 2021.

Features of the Ordinance

- It dissolves certain **existing appellate bodies and transfers their functions (such as adjudication of appeals) to other existing judicial bodies**.
- The Ordinance amends the 2017 Act to include provisions related to the composition of **search-cum-selection committees and term of office of tribunal members** in the Act itself.
- The Ordinance includes the **National Consumer Disputes Redressal Commission established under the Consumer Protection Act, 2019** within the purview of the Finance Act, 2017.

Search-cum-selection committees

- The Ordinance specifies that these Committees will consist of:
 - the Chief Justice of India, or a Supreme Court Judge nominated by him, as the Chairperson (with casting vote),
 - two Secretaries nominated by the central government,
 - the sitting or outgoing Chairperson, or a retired Supreme Court Judge, or a retired Chief Justice of a High Court, and
 - the Secretary of the Ministry under which the Tribunal is constituted (with no voting right).

Term of Office

- The Ordinance specifies that the term of office for the Chairperson of the tribunals will be of four years or till the attainment of the age of seventy years, whichever is earlier.
- For other members of the tribunals, the term will be of four years or till the age of sixty-seven years, whichever is earlier.

Abolition of Bodies

- The Ordinance removes the following bodies from the purview of the Finance Act, 2017:
 - the Airport Appellate Tribunal established under the Airports Authority of India Act, 1994,
 - the Appellate Board established under the Trade Marks Act, 1999,
 - the Authority of Advanced Ruling established under the Income Tax Act, 1961,
 - the Film Certification Appellate Authority established under the Cinematograph Act, 1952.

Reasons behind Abolition of Bodies

- It is **part of the tribunal rationalisation process which** initiated in 2015. By the Finance Act, 2017, seven tribunals were abolished or merged based on functional similarity and their total number was reduced to 19 from 26.
- In these tribunals, **public at large are not the litigant, hence**, they will be merged with the commercial bench of high court.
- Abolition of bodies will **ensure more judicial independence**.

Concern with the Act

- The tenure of four years fixed by the Ordinance is contrary to the directions issued by the Supreme Court in the Madras Bar Association case (2020). According to the Supreme Court, four year tenures discourages meritorious candidates.
- Supreme Court has also held that small tenure enhances arbitrariness of the executive by letting them interfere with the tribunal work.
- Court had directed to let search committee only recommend one name for the appointment. But, the ordinance has kept it two names.
- Court had held that appointment must be done within 3 months after submission of names by the search committee. But, the central government has made it preferably in 3 months.

Way Forward

- The Ordinance is a path as per the multiple rulings of the court and try to rationalise the multiple act governing tribunals in India.
- Abolition of appellate tribunals have strengthened the position of high court and ensured judicial independence.
- By incorporating court guidelines on search and selection committee, ordinance has tried to create balance between judicial independence and fast and speedy justice.

Constitutional Provisions regarding Tribunals

Administrative Tribunals

- **Article 323 A empowers the Parliament to provide** for the establishment of administrative tribunals.
- In pursuance of Article 323 A, the **Parliament has passed the Administrative Tribunals Act in 1985. The act authorises the Central government to establish one Central administrative tribunal** and the state administrative tribunals.

Purpose of Administrative tribunals

- It is for the adjudication of disputes relating to recruitment and conditions of service of persons appointed to public services of the Centre, the states, local bodies, public corporations and other public authorities.

Tribunals for other matter

- Under Article 323 B, the Parliament and the state legislatures are authorised to provide for the establishment of tribunals for the adjudication of disputes relating to the following matters:
 - Taxation
 - Foreign exchange, import and export
 - Industrial and labour
 - Land reforms
 - Ceiling on urban property

Difference Between article 323A and 323B

- While Article 323 A contemplates establishment of tribunals for public service matters only, Article 323 B contemplates establishment of tribunals for certain other matters (mentioned above).
- While tribunals under Article 323 A can be established only by Parliament, tribunals under Article 323 B can be established both by Parliament and state legislatures with respect to matters falling within their legislative competence.
- Under Article 323 A, only one tribunal for the Centre and one for each state or two or more states may be established. There is no question of hierarchy of tribunals, whereas under Article 323 B a hierarchy of tribunals may be created.





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IAS GAZETTE

APPOINTMENT TO CBI**GS-II GOVERNANCE****Context:**

- Recently, the Supreme Court told the government **that interim appointments to the post of Central Bureau of Investigation director cannot go on.**
- A petition regarding the opposing the appointment of interim/acting director was filed in the court.

Petitioner's arguments

- **Lack of provisions**
 - There is no provision for the appointment of an acting director in CBI.
 - The appointment of a full-time director as per the statutory law is necessary for upholding the rule of law.
- **Delay of meeting:**
 - Centre was delaying a meeting of high-powered selection committee as it "wants to bypass" the Chief Justice of India.
- **Constitutional Morality**
 - the premier investigative agency **should function independently for enforcement of the rights of the citizens under Articles 14 and 21** of the Constitution of India.
- **Violation of Law**
 - It is incumbent on the central government to **call for a meeting of the selection committee for the appointment of his successor as per the law**, well in advance, so as to ensure a smooth transition.

Need for full time CBI director

- He supervises all the work in the CBI.
- He is responsible for **constitution of investigating teams for probing cases**
- He is responsible to **enhance the functional autonomy of the CBI director**
- He also **limits the extent of executive discretion in the matter of appointment** of this key functionary.

Issues with CBI

- **Dependence on central government:**
 - CBI can investigate only those cases which are referred to it by State. It cannot suo motto take cases.
 - This gives a chance to political executive to target opposition members and dissenters.
 - **Supreme Court had called CBI as 'caged parrot' in 2013** due to its functioning as per the wishes of central government.
- **Lack of Financial autonomy:**
 - CBI also lacks financial autonomy.
 - It depends entirely on government even for small administrative expenses.
- **Lack of Transparency**
 - Lack of transparency in selection procedure of director and also no effective external monitoring system to check misuse of its power.
- **Lack of Legal Backing:**
 - CBI charter of duties is not protected by legislation.
 - Its functions are merely based on resolutions which draw its powers mainly from the Delhi Special Police Establishment Act.
- **Shortage of Man power**
 - According to a Parliamentary panel, 789 posts in executive ranks, 77 posts of law officers and 415 posts of technical officers and staff were lying vacant.

Suggested Reforms

- **Role of Lokpal**

- Lok Pal provides for appointment of director, CBI through a collegium system which is a step in right direction.
- Lok Pal should be allowed to decide cases which CBI takes up, not the executive.
- CBI to report to Lok Pal for investigation of such cases. Lok pal can supervise and oversee CBI.

- **Changes in Legal Mechanism**

- Substitute archaic DPSE act by new CBI act. Define the role, jurisdiction and legal powers of CBI.
- Also give the CBI financial autonomy in the statutory law as has been given to Supreme Court, CAG, etc.

- **Personnel administration reforms**

- Have more establishments in the form of judges, prosecutors and support staff for CBI.
- Have a dedicated cadre for CBI. The current practice of appointing IPS officers may show favouritism towards some political and permanent executive.

- **Improvement of functioning**

- There's a dire need to **improve the capability of the intelligence-collection machinery and upgrade its resources**, the intelligence-sharing mechanism.

- **Enhanced accountability of CBI**

- There should be **an accountability commission headed by three retired Supreme Court or high court judges**. The committee will look into cases of grievances against the CBI.

Way Forward

- CBI plays a pivotal role in checking corruption at highest levels. The need for autonomy for such an organisation is beyond any question and must be ensured to cleanse our political system.

About Central Bureau of Investigation:

Establishment

- The Central Bureau of Investigation (CBI) was set up in 1963 by a resolution of the Ministry of Home Affairs. Later, it was transferred to the Ministry of Personnel and now it enjoys the status of an attached office.
- The Special Police Establishment (which looked into vigilance cases) setup in 1941 was also merged with the CBI.
- The establishment of the CBI was **recommended by the Santhanam Committee on Prevention of Corruption (1962–1964)**.
- The **CBI is not a statutory body. It derives** its powers from the Delhi Special Police Establishment Act, 1946.

Functions

- The CBI is the main investigating agency of the Central Government.
- It plays an important role in the prevention of corruption and maintaining integrity in administration.
- It also provides assistance to the Central Vigilance Commission and Lokpal.

Composition of CBI

- The CBI is headed by a Director.
- The Director of CBI has been provided security of two-year tenure in office by the CVC Act, 2003.

Appointment of CBI Director

- The Central Government shall appoint the Director of CBI on the recommendation of a three-member committee consisting of the **Prime Minister as Chairperson, the Leader of Opposition in the Lok Sabha and the Chief Justice of India or Judge of the Supreme Court** nominated by him.

CRIMINALISATION OF POLITICS

GS-II GOVERNANCE

Context

- According to the **National Election Watch (NEW)** and **Association of Democratic Reforms (ADR)**, in the Assembly elections in Assam, Kerala, Puducherry, Tamil Nadu and West Bengal, at least 1,157 out of 6,318 candidates have criminal cases against them.

About Criminalisation of Politics

- Criminalisation of Politics refers to a situation where criminals start entering politics through use of Money or muscle power.

N N Vohra Committee

- N N Vohra committee had defined it where criminals are either given patronage by the political parties in lieu of assistance provided by them during the election process or criminal enter the Politics through money and muscle power.

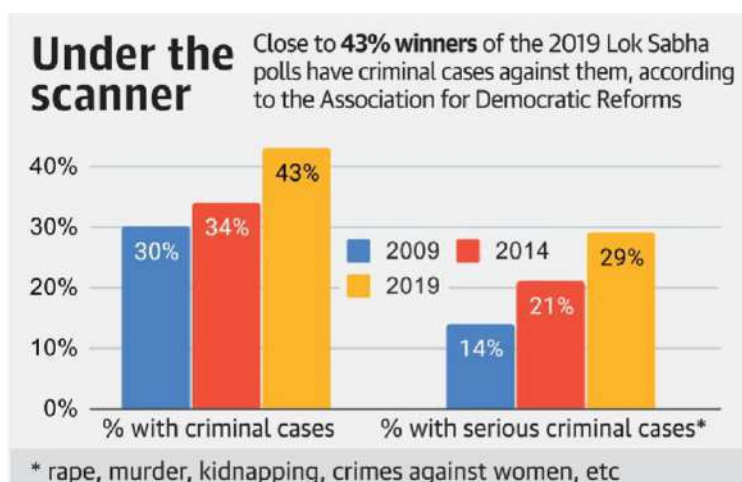
Data

- Current Parliament has highest no of MP with criminal background. 43% of elected MP in 2019, 39% of elected MP in 2014 has serious criminal charges against them. Major parties are fielding criminal background candidates.

Reasons behind rise of Criminalisation in Politics

Supply side factors: Motivation for criminals to enter the process

- Collapse of Electoral financing:** Candidates who are richer are likely to win the election. It brings aspect of money laundering, criminals with rich background into elections.
- Complete breakdown of law and order:** It makes easier for criminal background to easier the contest elections. **Judicial delays help them.** **Politicisation** of police has made nexus between politician and criminals stronger.
- Lack of Legal Mechanism:** Representation of people act lacks any strong mechanism to deal with the criminalisation. Election commission suggestion to bar candidates with charge sheets in serious cases involving prison for more than 5 years has not found ground with the parliament.
- Politics of Self Preservation:** any criminal winning the election will use law enforcement machinery to target his adversary and ensure that it doesn't chase his own case. Politicisation of CBI is testimony of it.



Demand side: Why voters elect them

- Failure of Governance:** Voters consciously elect such candidates due to failure of governance. These candidates have generally good political connection and can get things done. These candidates can get public service delivery.
- Lack of Option:** Most of the candidates in India has criminal cases. It leaves with little option to the voters as very few clean candidates contest the elections.
- Public Perception:** Most of the voters conceive politics as an arena of criminals. They do not have concern with the long term consequences of the criminalisation of politics.

Impact of Criminalisation of Politics

- **Decline of trust in democracy:** Law breakers become the law makers. This destroys the trust in the democracy and sets a wrong precedent for people.
- **Moral decline of society:** Parliamentarian needs to be ideal citizen for development of egalitarian society. But, criminals becoming the trustee of power send wrong message to society and corrupts the moral fabric.
- **Roadblock to electoral reforms:** Continuous electoral reforms are necessary to ensure free and fair elections but such MPs obstruct the process of electoral reforms.
- **Rise of crony capitalism** Rise of crony Capitalism as these legislatures engage in dishonest practices to amass the wealth. It leads to wastage of public resources and poor development in the country.
- **Breakdown of Law and Order:** Politicisation of law enforcement machinery which leads to breakdown of law and order. Rule of law is a mandatory condition for development and growth.

- NEW is a nationwide campaign since 2002 comprising more than 1200 Non-governmental Organizations (NGOs) and other citizen led organizations working together on electoral reforms, improving democracy and governance in India.
- ADR is an Indian NGO established in 1999 situated in New Delhi.

Legal Provisions

- Currently, under the Representation of Peoples (RP) Act, lawmakers cannot contest elections only after their conviction in a criminal case.
- Under Section 8 of the Representation of the People (RP) Act, a person convicted with a sentence of two years or more years is disqualified from contesting elections.

Supreme Court Judgement

Association for Democratic Reform 2002

- The Supreme Court judgment of May 2, 2002 mandated that candidates disclose their criminal antecedents, if any, as also their financial and educational background.

Ramesh Dalal vs Union of India -2005

- In Ramesh Dalal vs. Union of India 2005, the Supreme Court held that a sitting Member of Parliament (MP) or Member of State Legislature (MLA) should also be subject to disqualification from contesting elections if he is convicted and sentenced to not less than 2 years of imprisonment by a court of law.

Lily Thomas vs. Union of India 2013

- The Supreme Court in Lily Thomas vs. Union of India 2013 held Section 8(4) as unconstitutional and void. Hence, now if a sitting member of Parliament or state legislature is convicted and sentenced to not less than 2 years of imprisonment, he will get immediately disqualified from being member of house.

Judgement of None of the Above (NOTA)

- Supreme Court held that a voter could exercise the option of negative voting and reject all candidates as unworthy of being elected. The voter could press the 'None of the Above' (NOTA) button in the electronic voting machine (EVM).

SC LEADS FIGHT TO CLEAN UP POLLS	
CASES THAT LED TO THE RULINGS	
2002 SC directs all candidates to file affidavit detailing their criminal antecedents, educational qualification and details of their assets. Upholds voters' right to know about a candidate's antecedents to make an informed choice (Association of Democratic Reforms)	Mar 2014 SC orders trial courts to hold day-to-day trial in criminal cases pending against sitting MPs and MLAs and complete it within one year from framing of charges
July 2013 SC quashes provision in Representation of the People Act that allowed MPs and MLAs to continue their membership in a House by merely filing appeal against their conviction and sentence of more than two years in a higher court. This meant MPs and MLAs would be disqualified immediately on conviction and sentence of more than 2 years. (Lily Thomas and Lok Prahari case)	Aug SC recommends to PM/CMs not to include persons , against whom charges have been framed in serious offences, in their council of ministers (Manoj Narula)
Sept SC asks EC to provide ' none of the above ' choice to voters to exercise their right to express no confidence against all candidates in fray	Mar 2016 SC refers to 5-judge Constitution bench whether framing of charge in heinous crimes (which entails imprisonment of five years or more) against an MP or MLA would disqualify him. This also meant—whether a person against whom charges framed in serious offences be debarred from contesting elections (Public Interest Foundation)

Public Interest Foundation v. Union of India

- It shall be mandatory for political parties [at the Central and State election level] to upload on their website **detailed information regarding individuals** with pending criminal cases (including the nature of the offences, and relevant particulars such as whether charges have been framed, the **concerned Court, the case number etc.**) **who have been selected as candidates, along with the reasons for such selection**, as also as to why other individuals without criminal antecedents.
- These details **shall be published within 48 hours of the selection of the candidate or not less than two weeks before the first date for filing of nominations**, whichever is earlier.
- The political party concerned shall then submit a report of compliance with these directions with the Election Commission within 72 hours of the selection of the said candidate.

Others

- Supreme Court directed government to set up special court to take up cases against MP and MLA. 12 fast track courts have been set up for cases against MP and MLA.

Way forward

- State capacity to deliver public service needs to be strengthened. Digital India, good governance and rights based approach is the need of hour. Public service needs to be equitable in power.
- Institutions **dealing with rule of law needs to be strengthened. Police reform along the line of Supreme Court directives can** go a long way to deal with criminalisation of politics.
- Regulating the affairs of a political party is essential for a cleaner electoral process. Therefore, it is **imperative to strengthen the election commission**.
- Various **committees (Dinesh Goswami, Inderjeet Committee)** on the electoral reforms have recommended for **state funding of elections** which will curb use of black money to a large extent and thereby will have a significant impact on limiting criminalization of politics

ELECTION COMMISSION

GS-II GOVERNANCE

Context

- Recently, Madras High court has held election commission responsible for the rise of the cases.

High Court Observations

- The Election Commission of India (ECI) was responsible for the second wave in the country
- Its officials should probably be tried on murder charges for allowing political parties to hold massive rallies without following Covid-19 norms.
- Face masks, sanitizers weren't used and no social distancing was maintained during election campaigning.

Election Commission response

- Responsibility of State Disaster Management Authority
 - According to the Covid-19 rules notified under the Disaster Management Act, 2005, the **State Disaster Management Authority (SDMA) has the responsibility to ensure the rules are followed**.
 - At no occasion, the **Commission takes over the task of SDMA for enforcement** of COVID-19 instructions.
- Polling with full compliance of norms: Polling was conducted following all prescribed COVID appropriate, which witnessed good electoral participation with full compliance of norms by all concerned.

Criticism of Election Commission

- **Decline of Trust:** As election commission is increasingly being seen as a body more closely to the government than working independently. Position parties have accused it of **going slow against certain political party**.

- **Lack of Transparency in appointment:** there are no safeguards in the procedure for its own appointments. The government picks the commissioners with no consultation.
- **Arbitrary standards:** Election commission has issued gag against using army photographs in the political campaign. But, allowed certain leaders to use the army in their campaign thus discriminating against political parties.
- **Delay in cases:** Election commission is taking time to clear the cases which is leading to cause confusion and decline of trust.
- **Failing to regulate income tax raids:** The commission also failed to check the Department of Revenue, which conducted raids on members of Opposition parties, without keeping it informed.

Way Forward

- **2nd ARC report** recommended that collegium headed by the Prime Minister with the Speaker of the Lok Sabha, the Leader of Opposition in the Lok Sabha, the Law Minister and the Deputy Chairman of the Rajya Sabha as members should make recommendations for the consideration of the President for appointment of the Chief Election Commissioner and the Election Commissioners
- **Law Commission 255th Report on Electoral Reforms:** Strengthening the office of the Election Commission of India recommended Making the appointment process of the Election Commissioners and the CEC consultative
- **Financial Independence:** Expenditure of the election commission must be charged on the consolidated fund of India.
- **Enhancing Power:** Election commission must be given more power to regulate the expenditure of political party. Currently, election commission can regulate individual spending but not the spending by Political party.
- ECI must also be given more power to deal with repeat offenders or leaders who use religion or caste in political rallies. Currently, EC can only issue the notice to such leaders.

COVID-19 VACCINATION

GS-II GOVERNANCE

Context

- Recently, the government has opened up the vaccination drive for people above 18 years to increase the vaccination drive.

Need for the Vaccination drive

- **Tackle the Health crisis:** Vaccines are the ultimate panacea to curtail the ongoing 2nd wave of corona crisis.
- **Economic Sense:** Vaccine for all will ensure that the economy will be open. It is needed to protect the employment, support GDP growth.
- **Humanitarian crisis:** It has been widely proven that vaccines help in containing the spread of coronavirus. It helps in protecting the lungs of individual. So vaccination for all can save manifold people.

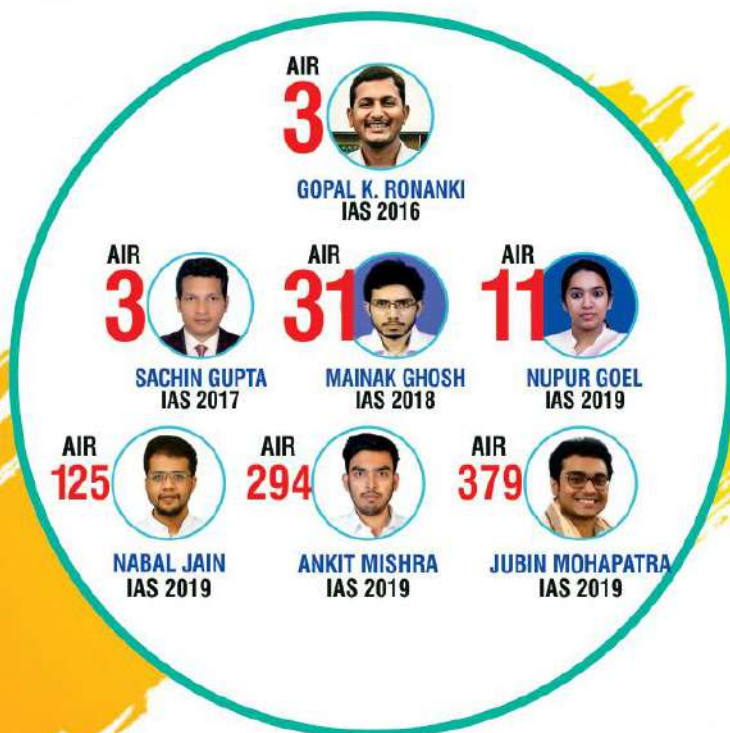
Challenges with Vaccination for all

- **Vaccine Shortage:** It would take at least 260 days from today for every adult to get at least a single shot with the current rate of 3 million doses a day.
- **Higher Prices:** Liberalizing vaccine policy will leave States in India in competition with each other to procure enough stocks of vaccines leading to higher prices for vaccination.
- **Shortage of Raw Material:** The inability of getting the much-needed raw materials from the United States – bags, vials, cell culture media, single-use tubing, specialized chemicals, etc. that have now been banned for export has disrupted the vaccine production in India.
- **International Commitments:** Of the 38 million doses the global alliance program Covax has so far distributed to 84 countries, 28 were from India. This makes India a most critical partner in global vaccination.

- **Obligation of Vaccine Maitri:** Under the vaccine diplomacy initiative, India exported 60 million doses, half on commercial terms and 10 million as grants. That obligation may have to be followed up perhaps as they would need for their second dose.

Way Forward

- **Targeted Vaccination:** Given the shortage of vaccines, India cannot afford to have a single or universal policy and needs to make it more targeted.
- **Massive Multimedia Campaigns:** we need to enforce masks by investing in massive multimedia campaigns for information, education, and communication, like it was done for polio and HIV.
- **Supporting Domestic Production:** It should also speed up approvals and financial packages for ramping up domestic production for expanding supply, expanding age bands.
- **Strengthening Vaccine Supply Chain:** Enhancing Electronic Vaccine Intelligence Network (eVIN) system will enhance real-time information on vaccine stocks and storage temperatures across all country's cold chain points.



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EXTRADITION IN INDIA**GS-II POLICY****Context**

- Nirav Modi can be extradited to India as per UK court. Nirav Modi was residing in Britain and India had requested Britain for extradition.

About Extradition

- Extradition is an act where **one jurisdiction delivers a person accused or convicted of committing a crime in another jurisdiction**, over to their law enforcement.
- It is a **cooperative law enforcement process between** the two jurisdictions and depends on the arrangements made between them.
- Besides the legal aspects of the process, extradition also involves the **physical transfer of custody of the person**.

Need and Underlying Philosophy of the Law of Extradition

- Balance of Territorial concept of Criminal law:** extradition allows **states to show solidarity in repression of criminality and co-operate in the international battle against crime**. It balances the traditional principle of territoriality of Criminal Law.
- Ensuring Justice:** It ensures that **nobody is able to bypass the rule of law in order** to flee to other countries. This creates an expression of deterrence and enhances respect in rule of law.
- Balance of International law with sovereignty:** It balances **competing imperatives of comity of nations (respect for a foreign court) on one hand, and international crime control on the other**.

India Extradition Law

- In India, the extradition of a fugitive from India to a foreign country or vice versa is covered by the **provisions of the Extradition Act, 1962**.
- The act lays down the first principles of extradition law.
- The obligation to extradite springs out of treaties/arrangements/conventions entered into by India with other countries.

Basic Principles Governing Extradition

- Principle of relative Seriousness of the offence:** Extradition is usually permissible only for relatively more serious offences, and not for trivial misdemeanours or petty offences.
- Principle of Dual Criminality:** This is the most important principle governing Extradition Law. This requires that the offence that the fugitive is alleged to have committed, should be an offence both in the requesting as well as the requested state.
- Principle of proportionality between offence and sentence:** A Requesting state should respect the principle of proportionality between offence and sentence
- Rule of specialty:** When a fugitive is extradited for a particular crime, he can be tried only for that crime.

A few common restrictions on extradition

- Failure to fulfil dual criminality:** if the act for which the criminal's extradition is requested is not a crime in the requested state, then the state can refuse extradition.
- Political crimes:** most nations refuse the extradition of political criminal suspects. This excludes terrorist offences and violent crimes.
- The possibility of certain forms of punishment:** if the accused is likely to receive capital punishment or torture in the requesting State, the requested state can refuse extradition.
- Jurisdiction:** jurisdiction over a crime can be invoked to refuse extradition.
- The absence of an extradition treaty.

Conclusion

- Extradition is a great step towards international cooperation in the suppression of crime. States should treat extradition as an obligation resulting from the international solidarity in the fight against crime.

NEW VACCINE POLICY

GS-II POLICY

Vaccination in India

- On Jan. 16, 2021, India began vaccinating healthcare and frontline workers.
- On March 1, vaccinations were extended to those above 60 years and those above 45 years with comorbidities.
- Starting April 1, all above 45 years were eligible to be vaccinated.
- Starting May 1, the eligible age for vaccination has been lowered to 18 years.

Authority on Vaccination

Role of Central Government

- The central government **has been and will continue to vaccinate only those above 45 years of age and all healthcare and frontline workers.**
- It procures the vaccines and allocates them to states to administer.
- **vaccinations for 45+, health care and frontline workers will be free at government hospitals.**
- Those due for their second dose will be prioritised.

Role of States Government

- States will **bear the responsibility to vaccinate those between 18-44 years.**
- States are **free to charge for vaccinations but most have announced** they will be provided free.

Role of Private entities

- As per the new vaccine policy, **private hospitals and other private entities can also purchase vaccines in the open market and provide vaccinations.**

Supply of Vaccination

- There are two domestic producers – Serum Institute of India and Bharat Biotech.
- **Over 90% of vaccines administered have been Covishield, supplied by Serum Institute. Covaxin, by Bharat Biotech,** constitutes the rest.
- Russian vaccine **Sputnik V has been cleared for use in India** and Dr. Reddy's Laboratories Ltd. has begun importing it.
- Other vaccines that have **received regulatory clearance in their home countries, such as Pfizer, Moderna, J&J can be imported once** they clear the fast-track approval process in India.

Cost of Vaccines

- From January to May, only the **federal government had the power to procure and distribute vaccines. States were only doing the last-mile delivery.**
- At that time, **the central government was purchasing vaccines from Serum Institute and Bharat Biotech at Rs 150 per dose, exclusive of GST.**
- The new **vaccine policy allows states and private entities to also procure and distribute vaccines.** For them, Serum Institute and Bharat Biotech are charging a higher price.

Vaccinations so far

- 16.04 crore doses have been administered across India as on May, according to the government's daily update. Of those, 3.04 are second doses.
- The bad news – that's about 3% of the eligible population.
- As many as 164 crore doses have yet to be administered for all 90 crore Indians above 18 years of age to be vaccinated (two doses each).

BODILY AUTONOMY**GS-II SOCIAL JUSTICE****Context**

- United Nations Population Fund's (UNFPA) flagship State of World Population Report 2021 titled 'My Body is My Own' has been launched.

What is Bodily autonomy?

- Bodily autonomy means that we have the power and agency to make choices over our bodies and futures, without violence or coercion.
- This includes when, whether or with whom to have sex. It includes when, whether or with whom you want to become pregnant. It means the freedom to go to a doctor whenever you need one.

Violation of Bodily autonomy

- Bodily autonomy and bodily integrity are violated when a husband prevents a woman from using contraception.
- They are violated when a person is forced to exchange unwanted sex for a home and food.
- They are violated when people with diverse sexual orientations and gender identities cannot walk down a street without fearing assault or humiliation.
- Bodily autonomy and integrity are violated when people with disabilities are stripped of their rights to self-determination, to be free from violence and to enjoy a safe and satisfying sexual life.

Some methods of violation of Bodily autonomy in society

- Virginity testing and forced anal testing
- Forced sterilisation and contraception use
- Homophobic and Trans phobic rape
- Forced and Child Marriage
- Female Genital Mutilation
- Honour Killings
- Marital Rape and Marry your Rapist Laws
- Reproductive Coercion
- Denial of Comprehensive sexuality Education

Measurement of Bodily Autonomy

- The international community has agreed to monitor two indicators – part of the Sustainable Development Goals (SDG) – measuring decision-making and laws on reproductive health care and information.

Decision-Making Power

- SDG Indicator 5.6.1 looks at three questions posed to women:
 - Who usually makes decisions about health care for yourself?
 - Who usually makes the decision on whether or not you should use contraception?
 - Can you say no to your husband or partner if you do not want to have sexual intercourse?
 - Only women who make their own decisions in *all three* of these areas are considered to have autonomy in reproductive health decision-making and to be empowered to exercise their reproductive rights.

Laws that empower

- SDG Indicator 5.6.2 looks at laws and regulations that guarantee full and equal access to women and men to sexual and reproductive health care, information and education. It covers:
 - Maternity Care
 - Contraception and Family Planning
 - Comprehensive sexual education and information
 - Sexual Health and Well being
 - The indicator measures whether a supportive law exists and whether there are restrictions, such as age limitations or spousal permission requirements.

Ensuring Autonomy for all

- The first step is articulating and affirming the concept itself. Too many people are unaware that they even have the right to make choices over their own bodies and futures.

Education is key

- Women with more education are more likely to make their own decisions about contraception and health care, and to be able to say no to sex.
- Comprehensive sexuality education—meaning age-appropriate, accurate information about one's reproductive health and rights—is crucial, as well.
- This education not only helps prevent unintended pregnancy and sexually transmitted infections, it also equips individuals to advocate for themselves.

Health Providers

- Patients must be aware of their rights, and they must be asked for informed consent.
- Medical guidelines, trainings on legal requirements, and specific gender-sensitivity trainings can help health-care providers actively support the bodily autonomy of patients.

Social Norms

- Social norms must also become more gender equitable.
- Improving women's opportunities for livelihoods and leadership roles in their community and beyond can increase their power to make decisions within households and about their bodies.
- progress fundamentally depends on men being willing to step away from dominating roles that privilege their power and choices at the expense of women's power and choices.

Laws

- Laws can have a significant impact on women's rights, gender equality, and sexual and reproductive health.
- They must be aligned with globally agreed human rights principles and commitments, and reviewed for gender responsiveness.
- The judiciary and police must also be aware of these laws and principles.

CORONAVIRUS AND CASTE

GS-II SOCIAL JUSTICE

Context

- 2nd wave of coronavirus has led to exodus of workers towards their villages as more states go to lockdown.
- Many scholars have tried to identify the impact of coronavirus on the caste equation in India.

Weakened the caste inequality in India

- Times of emergency as witnessed during **the pandemic dilute caste rigidity in society – at least for that period of acute distress.**
- These times **foreground the safety of the biological body** as the primary concern.
- The narratives of migrant workers **suggested that untouchability and vertical distance based on caste disappeared in those difficult times.**
- Water, **food and goods were moving hand to hand without thinking or bothering about caste. Brahmin had food at the lower caste food joints.**
- Coronavirus has **produced only two castes in villages – 'prawasi (outsider)' and 'niwasi (insider).**
- The pandemic has changed the dynamic of untouchability in Indian society and brought a type of horizontal untouchability between bodies, which goes beyond caste and religion.

Strengthened the Caste Inequality

- Many lower caste **were barred from purchasing essentials such as food and medicine** by their upper-caste locales.

- Caste discrimination was witnessed in the government employment schemes where most of the jobs were landed with the upper caste.
- Lower caste also is the poorest section which hampers its access to healthcare.
- In the recent times, lower caste faced multiple hurdles in accessing the crematoriums.

Way Forward

- Caste is the deepest social discrimination which can't go away with a pandemic. It will require continuous sustained efforts from the government.
- Faster, inclusive development is the only way for casteless society as envisaged by the Ambedkar.

CRIMINALISATION OF BEGGING

GS-II SOCIAL JUSTICE

Context

- Supreme Court is hearing a petition which seeks to decriminalise the begging.
- In the recent times, Railways has decided to decriminalise the begging in trains.
- The petition has sought directions to declare as "illegal and void" all provisions, except some sections, of the Bombay Prevention of Begging Act, 1959, Punjab Prevention of Beggary Act, 1971, Haryana Prevention of Begging Act, 1971 and Bihar Prevention of Begging Act 1951.

Data

- According to census 2011, the total number of beggars in India is 4, 13,670 and the number has increased from the last census.
- West Bengal has the highest no of beggars followed by Uttar Pradesh and Bihar.

Argument by the Petitioner

- **Violation of article 21:** The provisions of the statutes criminalising the act of begging put people in a situation to make an unreasonable choice between committing a crime or not committing one and starving which is violation of article 21.
- **Failure of state:** The presence of beggars is evidence that the state has failed to provide basic facilities to all its citizens.
- **Violation of constitutional Morality:** Criminalising the act of beggary is irrational and against the approach of a socialist nation as embedded in the preamble of our Constitution.

Reasons behind Beggary

- **Poverty:** One of the major factors that force people to make a miserable beggary. It does not mean that enough to support themselves or their families, many people resort to begging.
- **The lucrative business:** Because of easy profits and income from begging, some people can earn enough to make it as a career instead of doing honest labour.
- **Disorganized family:** Family is part of the relationship of our society, which affect our patterns of behaviour and activities. Any disruption in our home state, especially in the case of a poor one leads to a breakdown of the family, which do arise in beggary.
- **Lack of Parental Control:** The parents do not have the industrial centre of control necessary for their children, but mothers also often go to factories to work. As a result children can switch to energy in any direction. If they fall into bad company, they can develop love of travel, can lead to beggary.
- **Disability or illness:** The physical disabilities such as blindness, deafness or acquired in the beginning had this effect lot of people to beg as economic conditions of their families so as not to afford the maintenance of the disabled.

Legal Provisions

- There is no federal law in India as begging is a state subject in India.
- State government has justified their harsh laws that they aim to turn beggars into good people.
- Every state has their provision to criminalise the begging. 20 states have adopted Bombay Prevention of Begging act, 1959 as basis for their law.

Bombay Prevention of Begging act, 1959

- This act provides for 3-10 years penalty in beggar homes for beggars.
- People found begging can be arrested without warrant.
- **Definition of Begging:** "Begging" under the Act includes soliciting or receiving alms in a public place, whether or not under any pretence of singing, dancing, fortune-telling, performing or offering any article for sale.

J & K High Court observation

- **Violation of the constitutional guarantee of freedom of movement:** Such acts exclude the poor and marginalised from public places.
- **Violation of article 19(1) (a) "A freedom of Speech Guarantee":** Begging was a peaceful method to communicate their situation to another, and solicit their assistance, it was protected under freedom of Speech.
- **Violation of Basic Human Dignity:** The act are steeped in prejudice against poverty and premised on an absolute presumption of potential criminality. It violated the right to life and personal dignity under article 21 of constitution.

Delhi High Court Observation

- **Mandate of Social Security:** Government has the mandate to provide social security for everyone and the presence of beggars is evidence that the state has not managed to provide these to all its citizens.
- It decriminalised beggary by striking down, as unconstitutional.

Steps Taken

Bhor Yojana (Bhikshu Orientation and Rehabilitation for poor and homeless people) by Rajasthan

- BHOR Yojana by Rajasthan government will provide vocational training to rehabilitate the beggars.
- Specifically included yoga asanas that can strengthen their physical fitness irrespective of their illnesses.
- Rajasthan government will provide medical aid to the beggars, revamp the beggar homes and provide them education.

Others

- Central government has tabled the "The Beggars (Empowerment, skill development and Rehabilitation) bill 2014 for the rehabilitation of beggars. The bill must be reintroduced and passed.
- J & K high court, Delhi high court have already quashed the respective state laws. It is incumbent on Supreme Court to quash such laws.

Way Forward

- A data census must be carried out to ascertain the number of beggars in India, in each state and in each district to make a holistic policy.
- Target must be to reskill these beggars and engage them in employment rather than treating them as criminals.
- Children engaged in the begging practice must be sent back to juvenile homes and should be enrolled in the schools.
- Each state government must treat them as weaker section and must work for empowerment of this section.

WOMEN REPRESENTATION IN JUDICIARY**GS-II SOCIAL JUSTICE****Context**

- There is a demand for appointment of more women judges in the higher courts.

Data

- There has **never been a woman Chief Justice of India (CJI)**.
- In the 71 years of **history of the SC, there have been only eight women judges**.
- According to the data collected by Smash board, a New Delhi and Paris-based NGO, the representation of women across different courts and judicial bodies is also abysmally low.

Reasons behind low no of women in Judiciary

- **Lower number of women entering into the subordinate judiciary** which makes the whole pool distorted towards the men.
- **Double Jeopardy**: Women faces double jeopardy where they have to take care of their household responsibilities along with professional career. This puts them into disadvantage to male section.
- **Patriarchal Society**: Economic responsibility in the household is considered a male work and women are not encouraged in the house to take up professional careers.
- **High Dropouts**: Women have more dropout rate than male in the secondary education which affects their probability of undertaking a professional career.
- **Break in career**: Women face break in career due to responsibility of child rear which puts them into disadvantage.

Need for More Women in Judiciary

- **Inclusive Judiciary**: It will make judiciary more inclusive and wider representative of the society. Women are more accessible thus will enhance the reach of judiciary.
- **Increased Public trust**: By their mere presence, women judges enhance the legitimacy of courts, sending a powerful signal that they are open and accessible to those who seek recourse to justice.
- **Sensitivity towards marginalised section**: It will bring ethics of care along with ethics of rationality thus ensuring wider social justice along with economic justice.
- Women judges bring their lived experiences to their judicial actions, experiences that tend toward a more comprehensive and empathetic perspective- one that encompasses not only the legal basis for judicial action, but also awareness of consequences on the people affected.
- **Fairness to judgement**: By elucidating how laws and rulings can be based on gender stereotypes, or how they might have a different impact on women and men, a gender perspective enhances the fairness of adjudication, which ultimately benefits both men and women.
- **Flip to Women empowerment**: More women as judges would hail as role model to other females thus provide an overall lift to the women empowerment.
- **Constitutional Provision**: Article 15, 15(3), 16, 39(a) seeks to achieve the gender justice in society. By giving great participation to women in judiciary, a move towards gender justice can be achieved.

Way Forward

- **Creation of ALL India Services**: It will provide a single platform for competition leading to higher participation of women. In the long term, higher participation at lower judiciary will only ensure the more judges in higher judiciary.
- **Subsidised Coaching**: Women should be encouraged to take being judges as career option. State can run subsidised coaching as it does for UPSC to enhance women participation.

- **Consideration of women:** While in the collegium meeting, judiciary must keep the interest of women in mind while selecting the judges.
- **More women lawyers:** Judiciary must provide higher designation to more women lawyers. Currently, there are only 17 women senior counsel designates in the Supreme Court, as opposed to 403 men.
- **Collection of Data:** Supreme Court must direct collection of data to determine the number of women judges in the lower judiciary and tribunals and also to determine year-wise number of senior designates by all High Courts.

GROUNDWATER WITHDRAWAL IN INDIA

GS-II SOCIAL JUSTICE

Context

- According a new study, groundwater depletion in India may cause crop intensity of winter to decline by 20%.
- According to NITI Ayog Comprehensive water Index, 21 cities will run out of groundwater by 2030.

Mapping of Groundwater

- The overall contribution of rainfall to the country's annual ground water resource is 68%.
- The share of other resources, such as canal seepage, return flow from irrigation, recharge from tanks, ponds and water conservation structures taken together is 32%.

Concept of Groundwater development

- Ground water development is a ratio of the annual ground water extraction to the net annual ground water availability. It indicates the quantity of ground water available for use.

Issues Arising out of Groundwater Use

- Increasing and unsustainable extraction of groundwater has resulted in significant depletion, with consequent adverse environmental impact.
- From the large-scale loss of livelihoods to health issues related to lack of availability of safe drinking water to people migrating, the impact of water scarcity is severe.
- This is compounded by climate change, which makes precipitation patterns erratic and therefore affects the predictability of groundwater recharge.
- Currently, groundwater resources in nearly one-third of the country are under different levels of stress.
- Small and marginal farmers, women, and weaker sections of the society, disproportionately bear the brunt of groundwater depletion and contamination.

Major Causes of Ground Water Crisis in India

Demand Side Reasons:

- **Agriculture**
 - Around 70% groundwater is used in agriculture. 90% of irrigation in north-west is done using groundwater. It is through excess withdrawal of water.
 - High Minimum Support Price (MSP) for rice, wheat and sugarcane also leads to faulty cropping pattern.
- **Others**
 - Overpopulation is enhancing the need for the groundwater.
 - Use of the groundwater is increasing for industrial purposes.
- **Supply Side Reasons**
 - Low intensity rainfall in the North-western India due to change in the behaviour of monsoon.
 - Concretisation of roads, drainage, colonies leads to less seeping of precipitation of groundwater.

Way Forwards

- **Correction of Agriculture Practices:**
 - Use of **modern technologies to measure the soil moisture** and providing irrigation on need basis.
 - **Usage of the drip and sprinkler irrigation than flood irrigation** to improve water use efficiency.
 - **Low water intensity crops must be planted in the low rainfall region.** Mustard, maize, Bazra is the ideal crop for north -west India.
- **Other steps needed.**
 - Taxation of the groundwater withdrawal must be done.
 - Aquifer mapping must be taken up at large scale and groundwater condition must be a critical part of economic planning at panchayat level.
 - Recently, government has launched Bhujal Yojana for augmentation of the groundwater in alliance with the World Bank. It should be implemented properly and on priority.
 - Rainwater harvesting must be done at individual level. Watershed development should be taken up to control the flow of rainwater into river.

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CASES OF REINFECTION

GS-II HEALTH

Context

- 58 cases of the 1,300 individuals or 4.5% could be classified as possible reinfections according to a study by the **Indian Council of Medical Research (ICMR)** which examined the cases of 1,300 individuals who had tested positive for the corona virus twice.

About the need to determine the Reinfection

Lack of clarity on Virus

- It is not clear whether a person who has been infected once develops permanent immunity against the disease, or can get re-infected after some time.

Determine the future course of action

- It will help decide the intervention strategies required to control the spread of the disease,
- help assess how long people would have to depend on masks and physical distancing.
- It will have implications on the vaccination drive as well.

How to determine reinfection

- Genome sequence analysis of the virus sample is done by scientists for conclusive proof of reinfection because of difference in two samples of the virus as virus mutates continuously.

Implications of the Reinfection

- The scientists point out that permanent immunity cannot be assumed.
- If reinfection is the case the use of masks and social distancing would be a new normal.

Difficulty in assessing reinfection

- Virus samples from every infected person are not being collected for genome analysis.
- Therefore, in most of the cases there is usually no genome sequence from the previous infection to compare with.

Cases of Reinfection across the Globe

- The first confirmed case was reported **from Hong Kong**.
- A couple of cases **from the United States and Belgium** also emerged.
- However, there have been **several cases of people testing positive for the virus multiple times, even in India**, but not all such cases are considered re-infections.
- Such cases are the result of what is called **"persistent viral shedding"**.

Persistent Viral Shedding

- When an individual gets infected by a respiratory virus like SARS-CoV-2, the virus particles bind to the various types of viral receptor.
- Thus, Recovered patients **can sometimes continue to carry low levels of virus within** their system for up to three months.

About Genome Sequencing

- Sequencing DNA means determining the order of the four chemical building blocks - called "bases" - that make up the DNA molecule.
- The sequence tells scientists the kind of genetic information that is carried in a particular DNA segment.

Benefits

- For example, scientists can use sequence information to determine which stretches of DNA contain genes and which stretches carry regulatory instructions, turning genes on or off.
- In addition, and importantly, sequence data can highlight changes in a gene that may cause disease.

About Genome

- Genome refers to an organism's complete set of DNA, which includes all its genes.

- These levels are no longer enough to make the person sick or transmit the disease to others, but it can get detected in diagnostic tests.
- The disease developed from such persistent virus is what is called Persistent viral shedding.
- **Viral shedding continues until only about 90 days**, According to the **Centres for Disease Control (CDC)** in the USA.

INCREASE IN MATERNAL DEATHS AND STILLBIRTHS

GS-II HEALTH

Context

- According to a study published in **The Lancet Global Health Journal**, the failure of the health system to cope with Covid-19 pandemic resulted in an **increase in maternal deaths and stillbirths**.
- The report is an **analysis of 40 studies across 17 countries** including Brazil, Mexico, the US, Canada, the U.K., Denmark, Netherlands, Italy, India, China and Nepal.

Findings of the Report

Impact on India:

- An analysis of HMIS data by Population Foundation of India shows that during the months of national lockdown last year between April and June:
 - 27% drop in pregnant women
 - a 28% decline in institutional deliveries
 - 22% decline in prenatal services.

Global Impact:

- Impact on Marginalised communities:
- Death of Pregnant women: in the U.K., where 88% of pregnant women, who died during the first wave of the pandemic, were from black and minority ethnic groups, the study states.
- **Decline of hospital deliveries:** hospital deliveries decreased most markedly among disadvantaged groups in Nepal.

Impact on Poor Countries:

- Pregnancy outcomes were worst in the poorer countries as their healthcare infrastructure couldn't cope with the health epidemic.

Impact on Pregnant women:

- 28% increase in the odds of stillbirth,
- risk of mothers dying during pregnancy or childbirth increased by about one-third.
- Rise in maternal depression

Reasons cited by the Report

- **Inefficiency of Healthcare infrastructure:** inefficiency of the healthcare system and their inability to cope with the pandemic resulted in reduced access to care.
- **Wider Societal changes:**
 - Intimate-Partner violence (domestic violence)
 - Loss of employment
 - Additional care responsibilities also led to deterioration in maternal health.

Suggestions

- **Policy Correction:** Policy makers and healthcare leaders must urgently investigate robust strategies for preserving safe and respectful maternity care, even during the ongoing global emergency.
- Investment of funds: Immediate action is required to avoid rolling back decades of investment in reducing mother and infant mortality in low-resource settings.

- **Continuation of Maternity Services:** Personnel for maternity services **not be redeployed for other critical and medical care** during the pandemic and in response to future health system shocks.

About Health Management Information System

Introduction

- Health Management Information System (HMIS) is a Government to Government (G2G) web-based Monitoring Information System
- It has been put in place by Ministry of Health & Family Welfare (MoHFW), Government of India
- launched in October 2008.

Objectives

- monitor the National Health Mission and other Health programmes
- provide key inputs for policy formulation and appropriate programme interventions.
- Current Status:
- Currently, around 2 lakh health facilities (across all States/UTs) are uploading:
 - facility wise service delivery data on monthly basis
 - training data on quarterly basis
 - infrastructure related data on annual basis on HMIS web portal.

Data Uploaded

- Service Delivery (Reproductive, Maternal and Child Health related, Immunisation family planning, Vector borne disease, Tuberculosis, Morbidity and Mortality, OPD, IPD Services, Surgeries etc. data) on monthly basis.
- Training Data (Trainings imparted to Medicals and Paramedics staff at District and State level data) on quarterly basis.
- Infrastructure (Manpower, Equipment, Cleanliness, Building, Availability of Medical Services such as Surgery etc., Super Specialties services such as Cardiology etc., Diagnostics, Para Medical and Clinical Services etc. data) on annual basis.

Benefits

- HMIS has been utilised in
 - Grading of Health Facilities,
 - identifications of aspirational districts,
 - review of State Programme Implementation Plan (PIPs), etc.
 - The analytical reports generated through HMIS also provides gap analysis and evidence based course correction.

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INDIA-CHINA RELATIONS**GS-II INTERNATIONAL RELATIONS****Context**

- During the 11th round of discussions between the senior military commanders of India and China on April 9, to resolve the over 11-month long standoff in eastern Ladakh, China had refused to vacate two of the four original friction points.

Details

- Patrolling Point 15 (PP15) in Hot Springs, and PP17A near Gogra Post:** China still has a platoon-level strength each, along with vehicles.
- PP15 and PP17A were two of the four points where the soldiers were eyeball-to-eyeball.
- The other points of friction at that time were **PP14 in Galwan Valley and the north bank of Pangong Tso.**
- PP15 and PP17A are two of the 65 patrolling points in Ladakh along the LAC.
- PP15 is located in an area known as the Hot Springs, while PP17A is near an area called the Gogra post.

Importance of this region

- The area lies close to Kongka Pass, one of the main passes, which, according to China marks the boundary between India and China.
- India's claim of the international boundary lies significantly east, as it includes the entire Aksai Chin area as well.

Background of India-China Relations

- Rajiv Gandhi's visit to China in December 1988 was the beginning of a new stage in India-China relations. It led to fundamental policy shifts.
 - First, both India and China agreed that this relationship would be fully normalized and would no longer be conditional upon prior settlement of the boundary question.
 - Second, both also undertook to maintain peace and tranquility along the LAC pending a final resolution that was fair, reasonable, and mutually acceptable.
 - Third, each acknowledged the legitimate contributions of the other in the maintenance of global peace and progress. This came to be loosely known among Indian circles as the Rajiv Gandhi-Deng Xiaoping modus vivendi.
- In the ensuing years there were positive or favorable outcomes from India's perspective.
 - rebuilding of leader-level interactions,
 - the formal Chinese acceptance of Sikkim as part of India,
 - important peace and tranquility agreements in 1993 and 1996,
 - the Agreement on the Political Parameters and Guiding Principles for the Settlement of the India-China Boundary Question in 2005,
 - reduced support to insurgent groups operating in northeastern India and adjoining areas, and
 - the growth of business.

India-China-USA Triangle

- The United States has been the guarantor of the regional order in Asia since 1945.
- China always considered the United States as an ideological challenge, but U.S. technology and capital were needed for China's modernization, and Beijing adjusted to U.S. hegemony until it was confident of its own strengths.
- India and America may not always have common positions, but their differences were never ideological, and India considers the United States a critical partner in its own modernization.
- As China prepares to challenge U.S. hegemony in the Indo-Pacific and India redefines its maritime policy to address domestic and strategic requirements, the U.S. presence in the Indo-Pacific is worth examining, especially how likely it is to shape the course of future India-China relations.

Sector-wise Relations

• Military relations

- o China and India conduct a joint military exercise called 'Exercise Hand-in-Hand'.

• Water sharing

- o A total of seven rivers that start in Tibet flow through India — Indus, Satlej, Karnali (Ghaghara), Subansiri, Brahmaputra and Lohit (and its tributary Dulai).
- o India has concern with **China's water-diversion, dam-building and inter-river plans**. Moreso, in a conflict, India fears that China can use the rivers as leverage.
- o China has already constructed **ten dams on the Bhramaputra** and its tributaries such as the **Zangmu Dam**, and there has been talk of China building a mega-dam at the "great bend" called the **Motuo Dam**.
- o India's concerns also stem from the fact that **China does not cooperate** with regard to **timely sharing of information** related to projects which would impact water sharing; nor does China allow Indian experts to visit dam sites.

• Economics

- o Bilateral trade between China and India touched **US\$89.6 billion in 2017-18**, with the **trade deficit widening to US\$62.9 billion** in China's favour.
- o Major commodities exported from India to China were: cotton; gems, precious metals, coins; copper; ores, slag, ash; organic chemicals; salt, sulphur, stone, cement; machines, engines, pumps.

Way Forward

• Building of Trust:

- o They can go down one of four paths:
 - a downward spiral toward armed confrontation;
 - armed coexistence;
 - coexistence with cooperation and rivalry; and
 - Partnership
- o Partnership looks unlikely at present. Armed confrontation would be an unwise move because both would be diminished to a lesser or greater degree. China, it is hoped, does not harbor visions of total victory.
- o What separates armed coexistence from coexistence with cooperation and rivalry is trust. None exists at present.
- o The trust will have to be built brick by brick, beginning with the LAC in eastern Ladakh.

• Boundary Issue:

- o The boundary is fundamental to the relationship. China's gesture to restore the status quo ante will be helpful.
- o Thereafter, a broader disengagement and de-escalation in the border's Western Sector could be worked upon with adequate written guarantees.

• De-Escalation:

- o Even after the resolution of the present standoff in eastern Ladakh, both sides may be in a **prolonged period of armed coexistence** as a new normal.
- o As the forces on both sides are likely to be relatively balanced, it would be **advantageous for both to return to the agreements** and understandings from 1993 onward and improve upon them.

China and India's Disputed Border



- **Trade Balance:**
 - o China will need to work on resolving the trade deficit with India. Decoupling will happen selectively, in the same way and for the same reasons that China is choosing to decouple from the United States.
- **Communication:**
 - o Better understanding of each other's regional initiatives through open dialogue is important to build trust.
 - o The Indo-Pacific vision is as much a developmental necessity for India as the BRI may be to China.
 - o Part of building trust must be an open discussion on each other's intentions in key regions – South Asia and the northern Indian Ocean and East Asia and the western Pacific – as well as respect for each other's special positions in the western Pacific and northern Indian Oceans.
- **Public Trust:**
 - o Public trust in China has been deeply damaged and is unlikely to recover for some time.
 - o Indians believe that China took advantage of the pandemic to bully India. Ways to rebuild public trust need to be identified.

INDIA-JAPAN RELATIONS

GS-II INTERNATIONAL RELATIONS

Context

- India and Japan resolved to fight the COVID-19 pandemic jointly. The observations on COVID-19 featured during a telephonic conversation between Prime Minister Narendra Modi and his Japanese counterpart Suga Yoshihide.

Details

- They highlighted the importance of close India-Japan cooperation to overcome these challenges, such as by working together to create resilient, diversified and trustworthy supply chains, ensuring reliable supply of critical materials and technologies, and developing new partnerships in manufacturing and skill development.
- The two leaders confirmed the importance of Japan-India bilateral and multilateral cooperation, including Japan-Australia-India-U.S. quadrilateral cooperation, towards realising a free and open Indo-Pacific.
- The two leaders discussed possible cooperation in areas like 5G, submarine cables, strengthening of industrial competitiveness, diversification of supply chains and development projects in the northeastern state.

Sector wise relations

- **Economic**
 - o Japan is the **3rd largest investor** in the Indian economy with cumulative FDI inflows of **\$30.27 bn during 2000–2019**, contributing **7.2% to India's total FDI** inflows during the same period.
 - o The **imports to India** from Japan stood at **\$12.77 bn in 2018–19**, making it India's 14th largest import partner.
 - o India and Japan signed an agreement in December 2015 to build a **bullet train line** between Mumbai and Ahmedabad using Japan's Shinkansen technology, with a loan from Japan of £12bn.
- **Military**
 - o They have shared interests in maintaining the **security of sea-lanes** in the Asia-Pacific and Indian Ocean, and in co-operation for fighting international **crime, terrorism, piracy and proliferation of weapons of mass destruction**.
 - o Indian Navy participated in **Exercise Malabar** with the Japanese and US navies, reflecting shared perspectives on Indo-Pacific maritime security.
 - o India is also negotiating to purchase **US-2 amphibious aircraft** for the Indian Navy.
- **Cultural**
 - o Japan and India have **strong cultural ties**, based mainly on **Japanese Buddhism**, which remains widely practiced through Japan even today.
 - o The two nations announced 2007, the 50th anniversary year of **Indo-Japan Cultural Agreement**, as the **Indo-Japan Friendship and Tourism-Promotion Year**, holding cultural events in both the countries.

- **2016 nuclear deal**

- o The deal took six years to negotiate, delayed in part by the 2011 Fukushima nuclear disaster. This is the first time that Japan signed such a deal with a non-signatory of Non-Proliferation Treaty.
- o The deal gives Japan the right to supply nuclear reactors, fuel and technology to India.

Way Forward

- **Security Policy**

- o Continuation of the **balancing security policy against China** that began with Prime Minister Narendra Modi and Shinzo Abe in 2014.
- o An affirmation of New Delhi and Tokyo's support for a Free and Open Indo-Pacific and continued willingness to work with the Quad, which is fast emerging as a central pillar of the security strategies of both nations.

- **Technology partnership**

- o Two powers should look to expand cooperation in sectors such as cyber security and emerging technologies - from AI and 5G to the Internet of Things and space research.
- o There should be an attempt to bring up the disagreements over India's insistence on data localization and continued reluctance to accede to global cyber security agreements such as the Budapest Convention.

- **Economic ties and Infrastructure development**

- o Japan is only India's 12th largest trading partner, and trade volumes between the two stand at just a fifth of the value of India-China bilateral trade.
- o There should be reaffirmation of Japan's support for key manufacturing initiatives such as 'Make in India' and the Japan Industrial Townships.
- o India will be keen to secure continued infrastructure investments in Northeast and the Andaman and Nicobar Islands.

- **Third country outlook**

- o The time has come for India and Japan to take a hard look at reports suggesting that joint infrastructure projects in Africa and Iran have stalled with substantial cost overruns.
- o Tokyo will also likely continue its charm offensive on the Regional Comprehensive Economic Partnership in an attempt to get New Delhi to reverse its decision not to join the massive trade compact.



SUEZ CANAL REOPENED

GS-II INTERNATIONAL RELATIONS

Context

- A container ship called the 'Ever Given' was freed from the Suez Canal on March 29, 2021, a week after it ran aground and blocked other vessels from transiting one of the world's most important waterways.

Importance of Suez Canal

- **Trade:** Since its completion in 1869, the Suez Canal has become the **world's third most important waterway** after the Straits of Hormuz and Malacca. It accounts for **12% of global trade** and **9% of the world's daily seaborne oil**.
- **Connectivity:** The importance of the canal stems first and foremost from its location; it is the only place that directly connects the waters of **Europe with the Arabian Sea, the Indian Ocean and countries of the Asia-Pacific**.

- **Saving Cost:** Without the Suez, shipments traveling between those parts of the world would have to **traverse the entire continent of Africa** around the Cape of Good Hope, adding hefty costs and substantially extending their journey times.
- **Saving Time:** Today, a ship traveling from a port in Italy to India, for instance, would cover around 4,400 nautical miles if it passed through the Suez Canal -- a journey that, at a speed of 20 knots, would take about nine days.

Impact of a Long Shutdown

- **More Rent:** The rate for renting oil tankers for shipping Middle East oil to Asia has almost doubled surging by 47% to US\$2.2 million.
- **Diversion:** Shipping companies have started to divert tankers bound for Asia away from the Suez Canal to the longer route around the Cape of Good Hope in Africa.
- **Daily Loss:** Lloyd's List estimates that the waiting game is costing \$9.6 bn per day.
- **Loss of time:** Diverting ships around Africa would have added a two to four week delay and several million dollars extra costs in fuel.

Alternative Routes to the Suez Canal

1. Around the Cape of Good Hope

- Sailing around Africa will add four weeks and several million dollars extra costs in fuel.
- A normal voyage for a vessel averaging 12 knots (14 mph) from

Suez to Amsterdam, takes 13 days via the canal.

Around the Cape of Good Hope, it takes 41 days.

2. The Panama Canal

- Many of the largest commercial vessels today, such as the 1,300-foot Ever Given, are too big to fit through the Panama Canal.
- The route via the Cape of Good Hope is the most likely detour even for vessels that can fit through the Panama Canal.
- In 2020, due to a combination of excess capacity and falling fuel prices, some shippers did just that opting to go the Africa route to avoid the Suez Canal transit fees.

3. The Northern Sea Route (NSR) across Russia's Arctic

- There is one more possibility but it too has severe limitations. A shorter route through the Arctic known alternately as the Northern Sea Route or NSR is being touted by Russia.
- The number of vessels using the NSR has increased to several hundred each year thanks in part to global warming that has reduced polar ice.

About Suez Canal

- The Suez Canal is an artificial sea-level waterway in Egypt, connecting the Mediterranean Sea to the Red Sea through the Isthmus of Suez and dividing Africa



and Asia.

- The canal is part of the Silk Road that connects Europe with Asia.
- A human-made waterway, the Suez Canal is one of the world's most heavily used shipping lanes, carrying over 12 percent of world trade by volume.
- It provides a crucial link for oil, natural gas and cargo being shipped from East to West.

Suez Canal Crisis

- The Suez Crisis, or the Second Arab-Israeli war, was an invasion of Egypt in late 1956 by Israel, followed by the United Kingdom and France.
- The aims were to regain control of the Suez Canal for the Western powers and to remove Egyptian president Gamal Abdel Nasser, who had just nationalised the canal.
- After the fighting had started, political pressure from the United States, the Soviet Union and the United Nations led to a withdrawal by the three invaders. The episode humiliated the United Kingdom and France and strengthened Nasser.

US EXIT FROM AFGHANISTAN

GS-II INTERNATIONAL RELATIONS

Context

- President Biden announced withdrawal of all US troops from Afghanistan by September 11.

Details

- There are about **2,500-3,500 US troops in Afghanistan** at present, plus a **NATO force of under 8,000**. A coordinated withdrawal is expected to begin soon.
- The impact of this announcement on various actors within Afghanistan and outside is bound to be far-reaching.

Impact of Withdrawal

- **Afghan Government and Taliban**
 - Biden's announcement has **removed all incentives for the Taliban** to agree for a dialogue with the Afghan government.
 - After the full withdrawal of troops, **Taliban are likely to see the war**, which they believe they have already won, to its completion.
 - Taliban are **confident of victory in the battlefield**, and the **Afghan government will struggle** to hold them at bay.
 - There is deep apprehension of a return to the 1990s, although there is also a view that the Taliban too have changed over 25 years, and would not want to alienate the international community as they did when they ruled Afghanistan during 1996-01.
- **Pakistan**
 - This is a moment of both **vindication** and **concern** in Islamabad.
 - The Taliban are a creation of the Pakistani security establishment. After the US invasion of Afghanistan, they removed themselves to safe havens in Pakistan territory, and the Taliban High Council operated from Quetta in Balochistan.
 - It was Pakistan that **persuaded the Taliban to do a deal** with the Trump Administration.
 - But US withdrawal also means **Pakistan will need to shoulder the entire burden** of the chaos that experts predict.
 - **Civil war is not ruled out** and with it, the **flow of refugees into Pakistan** once again, even as the country struggles with refugees from the first Afghan war.
 - All this at a time when the **economy is flailing**, and Pakistan stays afloat on an IMF loan with strict conditionalities.

• **India**

- New Delhi, would be **nervous** about the US withdrawal. India was on the outer edges of the Trump drive to exit Afghanistan that culminated in the Doha Accord, and was a reluctant supporter of the “intra-Afghan talks” between the Taliban and Afghan government.
- When the Biden Administration came in, India was hopeful of a US reset. The **Blinken proposal gave India a role**, by recognising it as a regional stakeholder, but this proposal seems to have no future.
- The **Haqqani group**, fostered by the ISI, would have a large role in any Taliban regime.
- Another concern would be **India-focused militants** such as Lashkar-e-Taiba and Jaish-e-Mohammed, which the Indian security establishment already believes to **have relocated in large numbers to Afghanistan**.

• **Russia, China & Iran**

- China would have much to lose from instability in Afghanistan as this could have an impact on the China Pakistan Economic Corridor.
- A Taliban regime in Afghanistan might end up stirring unrest in the Xinjiang Autonomous region, home to the Uighur minority.
- Conversely, as an ally of Pakistan, it could see a bigger role for itself in Afghanistan.
- The US exit is for **Russia a full circle after its own defeat** at the hands of US-backed Mujahideen and exit from Afghanistan three decades ago.
- In recent years, Russia has taken on the role of peacemaker in Afghanistan. But **both the Taliban and the Afghan government have been wary** of its efforts.
- After a conference in March of Russia, US, China and Pakistan, along with Taliban and Afghan delegates, a joint statement by the four principals said they **did not support the establishment of an Islamic Emirate**, leaving the Taliban angry.
- Russia's **growing links with Pakistan** could translate into a post-US role for Moscow in Afghanistan.
- As a country that shares borders with Pakistan and Afghanistan, **Iran perceives active security threats from both**.
- And a Taliban regime in Kabul would **only increase this threat perception**.

SECTOR-WISE INDIA-AFGHANISTAN RELATIONS

GS-II INTERNATIONAL RELATIONS

Political

- The **Strategic Partnership Agreement (SPA)** between the two sides, provides for assistance to help rebuild Afghanistan's infrastructure and institutions, education and technical assistance.

High Level Visits

• **2016:**

- Prime Minister Modi along with President of Islamic Republic of Afghanistan H.E Asharaf Ghani jointly inaugurated the **Afghan-India Friendship Dam**.
- PM MOdi inaugurated the newly built Afghan Parliament with approx INR 970 crore; announced new 500 scholarships for the children of the martyrs of Afghan Security Forces and gifted four Mi-25 Attack helicopters to the Afghan Air Force.

• **2018:**

- The two leaders reviewed and positively assessed the progress of the **multi-faceted India-Afghanistan strategic partnership**.
- They expressed satisfaction at the increase in bilateral trade that had **crossed the US \$ 1 billion mark**.
- The two leaders also appreciated the successful conclusion of the **India-Afghanistan trade and investment show in Mumbai** and expressed determination to strengthen connectivity between the two countries, including through **Chabahar port and Air-Freight Corridor**.
- It was agreed to deepen the **‘New Development Partnership’** in the areas of high impact projects.

- **2019:**
 - Prime Minister Narendra Modi extended greetings to Afghanistan who were due to also celebrate Afghan Independence Day, the 100th year, four days later.

Commercial Relations

- The total bilateral trade between India and Afghanistan for CY 2019-20 was at **US\$ 1.5 billion**.
- While there is immense potential to expand bilateral trade, the difficulties in **transit via Pakistan was a major hurdle** in expanding the trade ties.
- In order to expand trade to India, the Afghan government in collaboration with the Government of India launched a **dedicated Air Freight Corridor** on 19 June 2017.

Afghanistan India Culture Relations

- Given the extensive cultural linkage between India and Afghanistan, there is **considerable interest in cultural exchange events** on both sides.
- There have been several exchanges of artistes and music troupes over the past few years. Major such events include an **“India-Afghanistan Culture Week” held in New Delhi** in November 2017.
- In addition to the above people to people exchanges, the two Governments came together to establish an **India-Afghanistan Foundation (IAF)** in 2007.

Sports Cooperation

- India and Afghanistan have robust relations in the field of sports.
- Cricket has been a major factor in promoting people-to-people ties between the two countries.

Humanitarian Assistance

- Major humanitarian assistance by India to Afghanistan in recent years include the following:
 - To combat the global pandemic of COVID-19 and related issues of food security, India is committed to deliver 75,000 MT of Wheat to Afghanistan in 2020.
 - Provision of food assistance of 11 lakh tonnes of wheat, both as grains and biscuits, was distributed to approximately 1.5 million school children.

INDIA-RUSSIA RELATIONS

GS-II INTERNATIONAL RELATIONS

Context

- Russian Foreign Minister Sergei Lavrov’s visit to Delhi this week, saw both he and External Affairs Minister S. Jaishankar reaffirming traditional India-Russia ties, but there were signs that those ties are being tested.

Details of the visit

- Mr. Lavrov’s trip was to make preparations for the upcoming visit of Russian President Vladimir Putin for the **annual summit**.
- On the bilateral front, both sides appeared to make progress on strategic cooperation, cooperation in energy, nuclear and space sectors, and on talks on a free trade agreement with the Eurasian Economic Union (EAEU).
- Agreements on military-technical cooperation for the joint production of India-made Russian weapons were also discussed.
- Neither side referred to the upcoming delivery of the \$5 billion S-400 missile defence system directly.
- They reaffirmed their commitment to their defence partnership, as well as avenues for more investment in connectivity including the International North-South Transport Corridor and the Chennai-Vladivostok Eastern Maritime Corridor.

Challenges faced by Russia in South Asia

- **India's tilt towards the USA:** New Delhi is seen to be gradually shifting away from dependency on Russia in favour of the United States, and India is buying arms and technology from the United States and Europe.
- **India vs Pakistan Dilemma:** Moscow can neither afford to alienate India, a huge market for defence and nuclear sales, nor ignore the potential market for military sales in Pakistan.
- **Chinese Influence:** The impact of China's BRI initiative on Russia's near abroad (Central Asia) is plainly clear. China's economic packages via the BRI were creating influences in Russia's backyard with unprecedented speed till the Chinese virus upended our world.

Russia-Pakistan Relations:

- Russia's relations with Pakistan deteriorated sharply in the **1980s during the Soviet-Afghan War**, when Pakistan played a key role going against the Soviet Union.
- Pakistan and Russia carried out their **first-ever joint military drills in 2016** despite reported Indian requests to postpone them due to the Uri attack.
- Pakistan has granted Russia **access to the warm water Gwadar port** in the Arabian Sea.
- Moscow has **supplied Pakistan with Mi-35 attack helicopters** and has signed contracts to deliver anti-tank systems, air defence weapons and small arms.
- Since the famous **American raid in 2011** that killed **Osama bin Laden**, Islamabad has gradually moved away from the United States, and sought rapprochement with Russia.

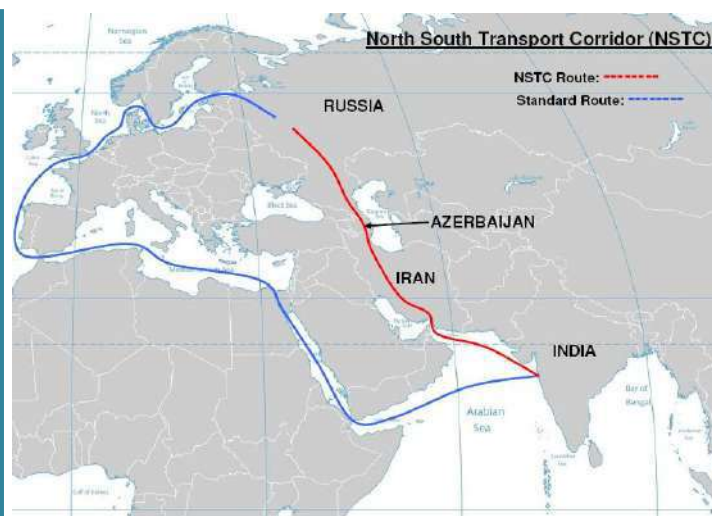
Sector-wise India-Russia Relations

- **Political relations:**
 - India and Russia began with the **Strategic Partnership** signed between the two countries in 2000.
 - Both countries closely collaborate on matters of shared national interest including at the **UN, BRICS, G20 and SCO**.
 - Russia also strongly supports India receiving a permanent seat on the **United Nations Security Council**.
 - In addition, Russia has vocally backed India joining the **NSG and APEC**.
 - Moreover, it has also expressed interest in joining **SAARC with observer status** in which India is a founding member.
 - **IRIGC:** The Indo-Russian Intergovernmental Commission (IRIGC) is the main body that conducts affairs at the governmental level between both countries.
- **Military relationship:**
 - With 68% Russia is the major arms supplier to India.
 - India and Russia have deepened their Make in India defence manufacturing corporation by signing agreements for the construction of naval frigates, **KA-226T twin-engine utility helicopters**, **Brahmos cruise missile**.
 - India inked the historic agreement worth **US\$5.43 billion with Russia to procure five S-400 Triumf surface-to-air missile defence systems**, the most powerful missile defence system in the world ignoring **America's CAATSA act**.
- **Economic relations:**
 - Bilateral trade in 2002 stood at \$1.5 billion and increased by over 7 times to \$11 billion in 2012 and with both governments setting a bilateral trade target of \$30 billion by 2025.
 - Russia has agreed to build more than 20 nuclear reactors over the next 20 year.
 - Both the countries set the investment target of \$30 billion by 2025. Since they met the target by 2018, India and Russia expect to enhance the figure to \$50 billion.
 - On 5 September 2019, India pledged a USD 1 billion line of credit (concessional loans) for the development of Russia's far east.
 - Russian imports from India amounted to \$3.1 billion or 1% of its overall imports, and 0.7% of India's overall exports in 2014.

- **Energy sector:**
 - o ONGC-Videsh acquired a 20% stake in the Sakhalin-I oil and gas project in the Russian Federation, and has invested about US\$1.7 billion in the project.
 - o Gazprom, the Russian company, and Gas Authority of India have collaborated in joint development of a block in the Bay of Bengal.
 - o Kudankulam Nuclear Power Project with two units of 1000 MW each is a good example of Indo-Russian nuclear energy co-operation.
- **Space Cooperation:**
 - o There has been a long history of cooperation between the Soviet Union and India in space. Examples include **Aryabhata** which was India's first satellite.
 - o **Chandrayaan-2** was a joint lunar exploration mission proposed by the Indian Space Research Organisation (ISRO) and the Russian Federal Space Agency (RKA) and had a projected cost of **₹4.25 billion** (US\$90 million).

North-South Transport Corridor:

- North South Transport Corridor route via **India, Iran, Azerbaijan and Russia.**
- The North-South Transport Corridor is the ship, rail, and road route for moving freight between **India, Russia, Iran, Europe and Central Asia.**
- The route primarily involves moving freight from India, Iran, Azerbaijan and Russia via **ship, rail and road.**
- The objective of the corridor is to increase trade connectivity between major cities such as Mumbai, Moscow, Tehran, Baku, Bandar Abbas,



Way Forward

- **Building confidence:**
 - o An action like the quiet diplomatic effort by Russia last year to get India and China to the table during their border clashes is critical for building confidence and much more effective than public airing of differences.
- **Diversify Economic Relations:**
 - o There is a need to revive the economic agenda that is currently heavily dependent on cooperation in defence and energy sectors.
 - o A forward-looking economic agenda should include cooperation in the hi-tech sector, biotechnology, nanotechnology, AI, space, start-up and innovation, pharmaceuticals, healthcare etc. to harness the strengths of the two countries.
 - o Encouraging SMEs to engage in bilateral economic cooperation will also be an important step in this direction.
 - o Furthering cooperation in the Russian Far East and the Arctic, both in bilateral and multilateral formats, would be beneficial.

Context

- Uncertainty over the legal status of crypto-currencies is unnerving Indian investors who, according to unofficial estimates, hold around \$1.5 billion (Rs 10,000 crore) in digital currencies. The government, which plans a law to ban private digital currencies, favours a digital currency backed by the Reserve Bank of India.

About Central Bank Digital Currencies

- Central bank digital currencies (CBDCs) are essentially the **digital version of cash**.
- Like cash, they are issued by and have their value **guaranteed by central banks**.
- An Indian CBDC would be denominated in rupees, with one digital rupee having the same value as a one-rupee coin.
- These digital currencies are the **latest innovation in payments technology** and could change the way financial transactions are done.
- People will be able to exchange currency with each other digitally in real-time using mobile phones, computers, smart watches, bar code scanning, and so on.

Digital Currency vs Traditional Payment Options

- Digital payment systems like **credit cards, debit cards, or mobile payment methods** operate quite differently from digital currencies.
- Traditional digital payment methods are carried out by **exchanging a certain amount of money** held in an account for goods or services.
- Such exchanges of traditional forms of money **do not happen in real-time**; instead, such transactions are tallied and settled after a period ranging from a few minutes to a few days.
- In contrast, exchanging digital currency involves a near **real-time settlement process**, as CBDCs are not a mere representation of physical money stored elsewhere but a complete replacement for currency notes.

State-Managed Digital Currencies vs Private Cryptocurrencies

- Private cryptocurrencies are **issued by private players** and are **not backed by a central bank**, so unlike CBDCs, there are **no tangible assets backing their value**.
- Bitcoin and its peer currencies are only available in fixed quantities, so their **price depends solely on supply and demand**. This makes **private cryptocurrencies an extremely volatile asset**.
- The supply and value of a CBDC is carefully decided and managed by a trusted entity like a central bank, which takes into consideration financial and monetary stability. This makes CBDCs a safer and less volatile asset.
- One of the big draws of private cryptocurrencies is that they can be traded anonymously.

Why are Central Banks interested in digital currencies?

- Efficiency:** As CBDCs could enable low-cost, instantaneous payments, they could help process transactions and exchanges more quickly, boosting a country's productivity and technological progress.
- Financial Inclusion:** CBDCs could conceivably provide better access to financial services as people may not need to have a bank account to use them. CBDCs can also be used offline without any internet connection. Transactions can be done with various means.
- Preventing corruption and illicit activities:** CBDCs could allow governments to keep track of every unit of its currency in circulation. If successful, that would reduce money laundering, tax evasion, black market transactions, and embezzlement.
- Monetary Policy:** CBDCs could be considered programmable money. In theory, central banks would be able to algorithmically adjust the supply of CBDCs based on interest rates and other key macroeconomic indicators. So

CBDCs could give central banks direct control of the money supply, thereby making the economy more responsive to changes in interest rates.

Potential Risks and Limitations of State-Managed Digital Currencies

- The introduction of CBDCs could **significantly alter and disrupt existing domestic and international payment systems**.
- Given the advantages of low costs, faster transactions, and offline capabilities CBDCs offer, it is likely that **consumers will prefer CBDCs to existing digital payment options** like credit and debit cards and mobile wallets.
- It is crucial for countries to **first gauge the impact of CBDCs carefully and create an enabling ecosystem before launching** them.
- Due to **money laundering concerns** that arise from anonymous transactions, it is unlikely that any government-managed CBDC will be **completely anonymous**.

India's Stance

- The recent 2021 Crypto-currency and Regulation of Official Digital Currency Bill is a step toward developing India's CBDC.
- However, it only establishes a basic legislative framework for digital currencies—there are no details about the design plans and implementation process, and the bill also plans to ban all crypto-currencies and other unregulated digital currencies.
- As the Reserve Bank of India and other central banks around the world grapple with the emergence of digital currencies, they must carefully determine the impact and functionality of CBDCs in their countries to develop a safe and efficient model.

INSOLVENCY AND BANKRUPTCY CODE

GS-III ECONOMY

Context

- India's gross domestic product (GDP) recorded a contraction of 23.9 percent in the first quarter of 2021 due to the economic shock of the COVID-19-induced lockdown. While growth is expected to pick up sharply in 2021, some underlying weaknesses in the economy have to be addressed to ensure a sustained high-growth trajectory. One of these is the problem of resolving failed firms and the consequent rise in NPAs in the financial sector.

Status of NPAs

- NPAs still made up **9.5 percent of bank assets in 2019**, despite capital injections from the government.
- India's long-standing NPA problem has exacerbated over the past two years. The main reason for this is the **regulatory forbearance by the RBI**.
- The **"extend and pretend" regime** has allowed banks to hide NPAs for close to a decade. This **finally ended in 2015** when an **asset quality review** conducted by the RBI highlighted a significant proportion of bank assets to be NPAs.

Introduction of IBC

- The IBC was introduced as a critical element of the solution to India's long-standing NPA problem.
- **Features:**
 - RBI issued a circular directing banks to mandatorily take all nonperforming loans through the bankruptcy framework within **stipulated time frames**.
 - The IBC **allows any creditor to trigger an insolvency** proceeding if a default occurs.
 - A wide variety of creditors are **part of a creditors' committee** after an insolvency proceeding has started.
- IBC remains the best mechanism for the resolution of bad debts in India's financial system, as **debt recovery rates under the IBC** have been vastly **superior to those under other resolution** mechanisms in India.

- o **RBI's 2019 Report:** Recovery of stressed assets improved during 2018–19 propelled by resolutions under the IBC, which contributed more than half of the total amount recovered.
- The **disposal of cases** has also been **much faster under IBC** than under other resolution frameworks.
 - o Proceedings under the IBC take an **average of 394 days to complete**, compared to 4.3 years in non-IBC frameworks.

Suspension of IBC

- In March 2020 the Indian government **suspended certain provisions of the IBC** in order to prevent firms from being forced into bankruptcies due to the economic shock of the lockdown.
- The government suspended sections 7 and 9 (**insolvency initiation by financial and operational creditors**, respectively) and section 10 (**debtor's initiation of insolvency proceedings**).
- The government declared that all **debt liabilities that arose during the period of the lockdown** could **never be treated as a default** under the IBC.
- In September 2020 the suspension was extended for another three months, bringing the total period of suspension to nine months.
- **Effect:**
 - o This left creditors of firms without recourse under the IBC to proceed against firms that defaulted during the lockdown.
 - o The suspension also prevented firms from filing for bankruptcy by themselves in order to restructure their debts.

Other Amendments

- Insolvency and Bankruptcy Board of India amended its regulations for the corporate insolvency resolution process to state that the **period of the lockdown shall not be counted toward the time frame** for any activity to be completed under an existing resolution process.
 - o This gave **relief to firms that were already in the middle of a resolution** process, some of whom may have gone into liquidation if not for this relaxation.
- RBI imposed a **moratorium on debt collection**. Specifically, it permitted all lending institutions regulated by it to offer a three-month moratorium for all debt payments due between March 1 and May 31, 2020.

Effect of these steps

- These measures led to the **introduction of a "calm period"** during which businesses that suffered due to the economic effects of the lockdown did not become bankrupt due to the financial disruption.
- The suspension of the IBC and the RBI moratorium also **prevented a flood of pro-debtor judgements** that would have acted as judicial precedents and hurt debt recovery incentives and institutional mechanisms in the long term.
- Firms that were **unhealthy prior to the lockdown** and about to default also received the benefits of the IBC suspension, as did healthy firms.
- This will **impact the recovery for lenders** due not only to the moratorium and the IBC suspension but also the continued existence of unhealthy firms in the economy that cannot be restructured or resolved in an orderly manner.

Issue with RBI Framework

- RBI framework is designed only for RBI-regulated lenders like banks; it does not provide a viable resolution framework for other lenders like bond holders.
- Banks and other RBI regulated lenders are allowed to classify restructured loans as standard assets even if they are impaired before the restructuring is implemented. This is likely to reduce the transparency of the asset quality of banks.
- The RBI resolution mechanism is predicated on the signing of inter creditor agreements between banks and nonbank lenders. This is required to reduce coordination problems between different categories of lenders.

Way Forward

- **Reassessing the IBC in context of India's Economic Recovery:**
 - Debtor-unfriendliness is perhaps the biggest issue with the existing design of the IBC, and it has been exacerbated by the political discourse on "crony capitalism" and the political economy of government-owned banks.
 - The judicial infrastructure for handling IBC cases needs improvement.
- **Creating more debtor friendly IBC:**
 - An entirely new chapter, with a debtor-in-control insolvency framework, must be inserted into the IBC. This chapter should be similar to chapter 11 of the U.S. Code, which gives a debtor a chance to file for bankruptcy while retaining possession of his or her firm.
 - The specifics of the Indian situation may necessitate that an additional oversight mechanism be added to such a framework. For example, under the recent amendments to UK bankruptcy law, the debtor firm operates under the supervision of an insolvency practitioner during a period of moratorium.
- **Reducing incentives to litigate:**
 - The government's focus on adding more judges and specialized benches for IBC cases is a welcome one.
 - There should be commensurate focus on reducing the demand for judicial resources within the IBC framework. This can be aided through two efforts.
 - Creating alternative mechanisms for firm resolution. Allowing debtors to reorganize their firms can possibly reduce the number of cases that currently go into liquidation.
 - Increasing the threshold for triggering insolvency. The threshold for triggering insolvency has been increased by the central government to Rs. 1 crore from Rs. 1 lakh.

DEVELOPMENT FINANCIAL INSTITUTION (DFI)

GS-III ECONOMY

Context

- The Bill for setting up the National Bank for Infrastructure Financing & Development (NaBFID) is now passed by the Lok Sabha. The Bill envisages setting up of a new government-owned Development Financial Institution (DFI) to facilitate **flow of long-term funds for Infrastructure projects**.
- The objective also includes **issuance of guarantees** and facilitating **development of a bond and derivative market**.

History of DFIs in India

- India had set up extremely successful DFIs such as **Industrial Finance Corporation of India (IFCI)** in 1948, **Industrial Development Bank of India (IDBI)** in 1964 and **Industrial Credit and Investment Corporation of India (ICICI)** in 1955.
- IFCI and IDBI were fully-owned Government of India (GoI) enterprises.
- The objective in setting up the institutions was to provide medium- and long-term project finance to Indian industries.
- Till about the mid-1990s, the DFIs were very effective in channelising such finance for industrialisation of the country.
- India had subsequently set up specialised DFIs to pursue medium-/long-term sector-specific credit flow, in contrast to the sector agnostic lending which the aforesaid DFIs engaged in.

Benefits of DFIs

- **Financing activities:**
 - The DFIs **extended term loan for setting up new units** as also for expansion, modernisation, and rehabilitation of existing units.
 - The DFIs could extend **assistance to any industry**, resulting in a **well-diversified (less risky) asset portfolio**.

- **Resources:**

- o The DFIs were funded by **patient equity capital and preferential market access** for raising medium-/long-term resources.
- o Preferential access was in the form of channelising multilateral funding lines, fund flow from **National Industrial Credit-Long-term Operations (NIC (LTO))** of Reserve Bank of India (RBI), issuance of **Statutory Liquidity Ratio (SLR)** and **tax-saving bonds**, and suitable enablers to attract funds available through capital gains and investment allowance reserves.

Challenges of NaBFID

- NaBFID is likely to face challenges of intense competition from multiple players. Necessary conditions for the proposed DFI to sustain will be its ability to
 - o retain low-cost advantage on a continuing basis,
 - o withstand market competition, and
 - o navigate challenges of asset inflexibility – exclusively infrastructure.
- It could encounter steep challenges in maintaining the cost advantage over a period of time, as the resources raised would have a fixed (specified) coupon with long maturity which may not be flexible.
- It would face competitive pressure in resource deployment as well as asset retention (refinancing by competitors).

Way Forward

- **Refinance risk:**

- o As loans are refinanced, after the project commences operation/attains stability, NaBFID may consider stipulating a repricing option with suitable rate incentives, after implementation.
- o Incentives may be designed carefully, so as to retain/exit the underlying loan, on asset quality considerations.

- **Cost/ maturity risk:**

- o Resources may be largely raised with a weighted average maturity to cover the implementation period of the portfolio loan assets, and not over long term, based on the “held to maturity” concept.
- o This would help reduce cost and also impart flexibility in average cost and maturity, over time.

- **Security package:**

- o NaBFID should have security right over all present and future cash flows of the assisted company on pari passu basis along with other lenders, and not be secured by first charge over fixed assets only.
- o NaBFID may closely review and choose to be selective in fund-based lending and instead concentrate more on the following activities, which are prominently included in its mandate/ objective:

- **Non-fund-based business:**

- o Considering the high capitalisation of NaBFID and its quasi sovereign status, guarantees issued by NaBFID are likely to be well accepted.
- o It may, therefore, look at having a large guarantee/NFB book, instead of concentrating on funding.

- **Corporate bond/debt market:**

- o NaBFID with its large capital base, government support, and systemic importance may concentrate well on strategies/modalities to harness resources for facilitating vibrancy in the debt market.
- o This would then have a more beneficial long-term impact on infrastructure development than term lending alone.

Conclusion

- DFIs in the past had taken steps to set up an efficient financial architecture of the country, comprising screen-based trading, and setting up of depositories and rating agencies, amongst others. These have facilitated evolution of the financial market, and made it more transparent. Success of NaBFID in imparting bond/debt market vibrancy will well be an important and a positive step in continuation of India’s endeavour in developing a robust financial structure.

CORPORATE SOCIAL RESPONSIBILITY EXPENDITURE

GS-III ECONOMY

Context

- Experts are calling on the government to ease Corporate Social Responsibility regulations to allow corporate expenditure on vaccinations for employees and treatment of employees suffering from Covid to be covered under spending for CSR.
- Currently, companies are not permitted to count expenditure incurred exclusively for the welfare of employees as part of their mandatory CSR expenditure.

Corporate Social Responsibility

- It can be referred to as a corporate initiative to assess and take responsibility for the company's effects on the environment and impact on social welfare.
- India is the **first country in the world** to mandate CSR spending along with a framework to identify potential CSR activities.
- In India, the concept of CSR is governed by **clause 135** of the **Companies Act, 2013**.
- Applicability:** Companies with an annual turnover of 1,000 crore and more, or a net worth of Rs. 500 crore and more, or a net profit of Rs. 5 crore and more.
- Execution:** Companies to set up a **CSR committee** which shall recommend a Corporate Social Responsibility Policy to the Board of Directors and also monitor the same from time to time.
- The Act encourages companies to **spend 2% of their average net profit** in the previous three years on CSR activities.
- Allowed Activities:** The indicative activities, which can be undertaken by a company under CSR, have been **specified under Schedule VII of the Act**. Example: Eradicating extreme hunger and poverty, Promotion of education, gender equality and empowering women, etc.

Changes due to Covid-19

- The Ministry of Corporate Affairs allowed companies to spend CSR funds on **Covid-19 relief**, including preventive healthcare and sanitation and on research and development of Covid drugs, vaccines and medical devices.
- Later, awareness or public outreach programmes on Covid-19 vaccination and setting up of makeshift hospitals and temporary Covid care facilities was also included.

Benefits of Further Easing CSR Norms

- Role in Vaccination Drive:** Approximately, Rs. 10,000 crore is available with listed companies annually for spending on CSR activities. If the eligible unlisted companies are taken into account, the available sum may be larger. This can be handy in supplementing the expenditure of the Centre and States on vaccination.
- Rural Population can be reachable:** Many of these companies have a presence in rural areas. This will ensure that the drive goes beyond the large cities and reach the rural population too.
- Benefit of Allowing Corporate Expenditure on Vaccinations for Employees under CSR:** This will boost vaccinations for unorganised labour in the manufacturing sector and will benefit the overburdened healthcare system.

RBI REPORT ON ASSET RECONSTRUCTION COMPANIES

GS-III ECONOMY

Context

- According to a Reserve Bank of India (RBI) report on ARCs, the **growth of the ARC industry has not been consistent** over time and **not always been synchronous** with the trends in non-performing assets (NPAs) of banks and non-banking financial companies (NBFCs).

Background

- Centre has announced an asset reconstruction (ARC) and asset management company backed by government guarantee to address the problem of NPAs with public sector banks.
- RBI supported the government's proposal for a new ARC as such an entity will strengthen the asset resolution mechanism further.
- The ARC industry began with the establishment of the Asset Reconstruction Company India Ltd (ARCIL) in 2003.
- After remaining subdued in the initial years of their inception, a jump was seen in the number of ARCs in 2008, and then in 2016.

Details of RBI Report

- **Poor Growth:** The RBI report said notwithstanding the rise in the number of ARCs, the growth in their assets under management (AUM) has been largely trendless except for a major spurt in FY14.
- **Mostly Declining:** When compared with the volume of NPAs of banks and NBFCs, the AUM of ARCs has been on a declining trend except during the period of high growth in the AUM around 2013-14.
- Of the total AUM, about 62 per cent and 76 per cent was held by the top-three and top-five ARCs in March 2020, respectively, the RBI report said.
- In terms of the capital base of the industry, 62 per cent was held by top three ARCs; the corresponding share was 67 per cent for the top five ARCs.
- **Reason:**
 - During 2019-20, asset sales by banks to ARCs declined, which could probably be due to banks opting for other resolution channels such as IBC and SARFAESI.
 - The acquisition cost of ARCs as a proportion to the book value of assets declined, suggesting lower realisable value of the assets.

About the Asset Reconstruction Company (ARC)

- An Asset Reconstruction Company is a **specialized financial institution** that **buys the NPAs or bad assets** from banks and financial institutions so that the latter can clean up their balance sheets.
- Or in other words, ARCs are in the business of buying bad loans from banks.
- ARCs **clean up the balance sheets of banks** when the latter sells these to the ARCs. This helps banks to **concentrate in normal banking activities**.
- Banks rather than going after the defaulters by wasting their time and effort, can sell the bad assets to the ARCs at a mutually agreed value.
- **(SARFAESI) Act, 2002;** enacted in December 2002 provides the legal basis for the setting up of ARCs in India.

COVID CASES AND ECONOMIC RECOVERY

GS-III ECONOMY

Context

- When there was growing optimism over India's economic rebound, when the IMF upgraded India's GDP forecast for FY 21-22 to 12.5%, the second Covid-19 wave has come as a rude shock to businesses and consumers alike.

Recent Trends of Economic Recovery

- **Tax Collection:**
 - It has been estimated that Gross Tax Collections will touch **₹20.16 lakh crore**.
 - The Centre's Indirect Tax Collections have touched **₹10.71 lakh crore in 2020-21**.
- **Exports:**
 - The exports figures have also seen a huge jump standing at 31 billion dollar.
- **Other Indicators:**
 - Sales of tractor & two-wheeler sales, E-way bills, and rail freight traffic showed growth in 2021.

Impacts of Resurging Covid Cases and Consequent Lockdowns

- **Nomura India Business Resumption Index (NIBRI):**
 - It is a weekly tracker of the pace of normalisation of economic activity.
 - The Nomura India Business Resumption Index (NIBRI) has registered the steepest fall in over a year to reach 24 percentage points below pre-pandemic levels.
 - Declining of NIBRI is a worrying sign given the sharp resurgence in pandemic cases.
- **Crisis at financial hubs:**
 - Maharashtra, Madhya Pradesh, Punjab, and Chhattisgarh are witnessing the highest surge in COVID-19 cases. They account for over 30% of India's GDP.
 - Curbs in these states will impact economic activity majorly.
- **Index of Industrial Production (IIP):**
 - It witnessed the sharpest contraction in the month of February 2021 since August 2020 at the rate of 3.6%.
- **Majorly hit sectors:**
 - Manufacturing may not be directly hit due to partial lockdowns.
 - However, the impact on the contact services sectors like hospitality, travel, and tourism will have a multiplier effect.
 - They have strong backward linkages with other sectors of the economy.

Effect in comparison to 1st wave

- Ratings agency CRISIL recently said in a note that the impact on industrial activity during the second wave is smaller in comparison to the devastation witnessed in 2020. Japanese brokerage firm Nomura has also suggested that business activity has fallen, but it will have a limited impact on the economy.
- The second wave has not impacted the livelihood of salaried employees to a great extent, it has again affected poorer households.
- Thousands of migrant labourers and daily wage labourers returned home when some states announced lockdowns in prominent cities.

Way Forward

- **Focus on Vaccinations:**
 - Only 8% of the country's population has received at least one shot.
 - The US and the UK have vaccinated close to 50% of their total population.
 - A shortage of vaccines could slow the progress of vaccine rollout. The government shall now increase the reach of the vaccines.
- **Decreasing Tax:**
 - The RBI foresees inflation averaging 5.2% in the April-June quarter.
 - The Centre and the States need to agree to forego some near-term revenue from petroproducts and reduce fuel taxes.
- **Increasing demand:**
 - More efforts and better policies are needed to increase the demand.
 - This must be done along with keeping inflation under control.
- **Expenditures as Proposed in the Union Budget:**
 - The support from the rebound in global growth and implementation of the Union Budget's proposed capital expenditures will reinforce India's economic revival.

NEW FIVE ALL-INDIA SURVEYS**GS-III ECONOMY****Context**

- The Labour Bureau has been tasked with five major All India Surveys by the Government of India.

The five surveys are

- **All-India Survey of Migrant Workers:**
 - To study the kind of employment related migration undertaken by workers, the details of working and living conditions faced by them and impact of COVID 19 on their world of work.
- **All-India Quarterly Establishment based Employment Survey (AQEES):**
 - The survey would provide the employment estimates for establishments employing 10 or more workers as well as those with employing 9 or less workers.
 - This highly useful establishment based survey will provide crucial data on the changes in employment situation across the selected sectors on a quarterly basis.
- **All-India Survey on Domestic Workers:**
 - The survey will be instrumental in estimating the number of domestic workers in the country for the first time ever.
 - Some additional specific objectives are to collect data on incidence and characteristics of households with domestic workers and the average number of domestic workers engaged by different types of households.
- **All-India Survey on Employment generated in Transport Sector:**
 - Estimates for employment generated in the transportation sector in the country will be generated using this survey.
- **All-India Survey of Employment Generated by Professionals:**
 - The survey will help in the estimation of employment generated by professions such as lawyers, medical professionals, cost accountants and chartered accountants.

Developed by

- These surveys have been developed and designed by the **Labour Bureau** under the **technical guidance of an expert group** chaired by Prof S. P. Mukherjee.
- The Labour Bureau is being **aided by BECIL**, a Government of India Enterprise under the **Ministry of Information and Broadcasting** to provide IT support.

Other details

- These surveys will be path breaking in their **"Paperless" data collection** approach due to use of tablet PCs in the field work, these tablets are equipped with the latest software application.
- Use of latest technology is likely to **reduce the survey completion time** by at least 30 - 40%.
- In another first these surveys will be conducted in major regional languages.

Significance

- These surveys will plug-in the data gap on various aspects of labour and employment and will aid evidence-based policy making processes.

WAYS AND MEANS ADVANCES (WMA) SCHEME

GS-III ECONOMY

Context

- The Reserve Bank of India (RBI) decided to continue with the existing interim Ways and Means Advances (WMA) scheme limit of Rs. 51,560 crore for all States/ UTs shall for six months i.e., up to September 30, given the prevalence of COVID-19.

Sudhir Shrivastava Committee on WMA: RBI sets up a six-member committee headed by Sudarshan Sen to review working of ARCs. Panel to submit report in 3 months.

Task of the taskforce:

- It will undertake a comprehensive review of the working of asset reconstruction companies (ARCs) in the financial sector ecosystem and recommend suitable measures for enabling them to meet the growing requirements.
- The panel will also review the existing legal and regulatory framework applicable to ARCs and recommend measures to improve efficacy of ARCs.
- It will also review the role of ARCs in the resolution of stressed assets, including under the Insolvency and Bankruptcy Code (IBC), and give suggestions for improving liquidity in and trading of security receipts.
- Besides, it has also been asked to review the business models of ARCs.

About Ways and Means Advances

- The Ways and Means Advances scheme was introduced in 1997.
- Purpose of the WMA scheme:**
 - The Ways and Means Advances scheme was introduced to meet mismatches in the receipts and payments of the government.
- Working:**
 - The government can avail of immediate cash from the RBI, if required. But it has to return the amount within 90 days. Interest is charged at the existing repo rate.
 - If the WMA exceeds 90 days, it would be treated as an overdraft (the interest rate on overdrafts is 2 percentage points more than the repo rate).
- WMA limit:**
 - The limits for Ways and Means Advances are decided by the government and RBI mutually and revised periodically.
- Types of WMA:**
 - There are two types of Ways and Means Advances – **normal** and **special**.
 - A **Special WMA or Special Drawing Facility** is provided against the collateral of the government securities held by the state. After the state has exhausted the limit of SDF, it gets normal WMA. The interest rate for SDF is **one percentage point less than the repo rate**.
 - The number of loans under normal WMA is based on a **three-year average of actual revenue and capital expenditure** of the state.

Asset Reconstruction Company:

- It is a special type of financial institution that **buys the debtors of the bank** at a mutually agreed value and **attempts to recover the debts** or associated securities by itself.
- These are registered under the RBI and regulated under the Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest Act, 2002 (**SARFAESI Act, 2002**).
- The ARCs take over a portion of the debts of the bank that qualify to be recognised as **Non-Performing Assets**. Thus ARCs are engaged in the business of asset reconstruction or securitisation or both.

DIRECT PAYMENT OF MINIMUM SUPPORT PRICE**GS-III AGRICULTURE****Context**

- Recent orders from the Food Corporation of India have led to a new flashpoint in the ongoing farmers protests, with farm unions warning that the Centre's insistence on direct payment and tenancy documentation could derail the crop procurement process.

Recent Orders Given by FCI

- Regarding Minimum Support Price (MSP):** Centre wants to make direct online MSP payment to farmers' bank accounts which will enable removal of middlemen from the process. At present, commission agents get the payments in their accounts who pay to farmers through cheques. They get a commission of 2.5%.
- Jamabandi System:** According to the new order, tenant farmers and sharecroppers must produce a jamabandi. It is a legal agreement proving that they have the right to till leased land, in order to get paid for procured crops.
- Quality Requirement:** New orders also proposed to tighten quality requirements for wheat and paddy procurement.

Importance of the proposed changes

- Transparency:** Direct payment to farmers' bank accounts bypassing the powerful arhatiyas or commission agents will lead to greater transparency.
- Non-Discriminatory:** No selection bias in choosing the beneficiaries based on attributes like caste and land size.
- Doubling of Farmers Income:** Removal of middlemen will help in achieving the goal of doubling farmers income.

Issues

- Role of Arhatiyas (Commission agents):** They play a key role in the Punjab and Haryana farm ecosystem by providing farm loans. The move has been opposed by a large section of farmers.
- Implementation Issue:** Implementing direct payment in haste can cause complex problems that will lead to exclusion of many farmers.
- Lack of legal agreement:** Many sharecroppers do not have Jamabandi or legal agreements and they will be at disadvantage in the new system.
- High Rejection Rate:** Proposals of tightening quality requirements for wheat and paddy procurement will make it difficult for the small farmers to get the benefit of open procurement.

Food Corporation of India

- It is a **statutory body** set up in 1965 by the **Food Corporations Act 1964**.
- It works under the Department of Food & Public Distribution, **Ministry of Consumer Affairs, Food and Public Distribution**.
- It has primary duty to purchase, store, move/transport, distribute and sell food grains and other foodstuffs.
- Each year, the Food Corporation of India purchases roughly 15 to 20 percent of India's wheat output and 12 to 15 percent of its rice output.
- Its mandate is to implement the following objectives of the National Food Policy:
 - Effective price support operations for safeguarding the interests of the poor farmers
 - Distribution of foodgrains throughout the country for Public Distribution System (PDS)
 - Maintaining a satisfactory level of operational and buffer stocks of foodgrains to ensure National Food Security
 - Regulate market price to provide foodgrains to consumers at a reliable price

Calculating MSP

- Since 2009, the Commission for Agricultural Costs and Prices fixes the MSP of a crop based on: cost of production, demand, supply, price fluctuations, market price trends, different costs and international market prices, agricultural wage rate

Commodities under MSP

A total of 23 commodities are covered by MSP mechanism:

- Cereals:** Paddy, Wheat, Maize, Sorghum, Pearl millet, Barley, Ragi
- Pulses:** Chickpea / Gram / Gramme, Tur, Moong, Urad, Lentil
- Oilseeds:** Peanut, Rapeseed, Soyabean, Sesame, Sunflower, Safflower, Niger seed
- Commercial crops:** Copra, Sugarcane, Cotton, Raw jute



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CT VALUE

GS-III SCIENCE & TECHNOLOGY

In News

- Amid a surge in COVID-19 cases, the Maharashtra government had requested the Centre to reduce the cycle threshold (CT) value cut-off from 35 to 24 for positivity rate under the RT-PCR test.
- They had asked to reduce the CT value for a lesser number of patients who come under the positive category.
- Days later, the Indian Council of Medical Research (ICMR) rejected the Maharashtra government's request.

What is CT value and why is it necessary?

- The CT value refers to the **number of cycles needed to amplify the viral RNA so that the virus can be detected.**
- An individual is considered COVID-19 negative, only if the CT value is 35 in the RT-PCR test.
- So, if the CT value is below 35 in the RT-PCR test, then the patient is coronavirus positive.

Polymerase chain reaction (PCR) is an amplification technique for cloning the specific or targeted parts of a RNA/DNA sequence to generate thousands to millions of copies of RNA/DNA of interest.

- Always remember:** LOWER CT VALUE = HIGHER viral load and HIGHER CT VALUE = LOWER viral load.

Viral Load

- Viral load refers to the **amount of virus in an infected person's blood.**
- This is expressed as the **number of viral particles in each milliliter of blood.**
- Higher viral load means the **infection and disease is progressing.**
- Viral load tests measure the quantity of genetic material, commonly RNA, of a virus present in the blood.
- There are three main tests used to measure viral load.
- These are reverse transcription-polymerase chain reaction (RT-PCR) tests, branched DNA (bDNA) tests, and nucleic acid sequence-based amplification (NASBA) tests.

To know about Viruses, Visit: <https://www.iasgyan.in/blogs/all-you-need-to-know-about-viruses>

To know about Basics of DNA, RNA Visit: <https://www.iasgyan.in/blogs/bengal-strain-all-about-mutation>

3D PRINTING

GS-III SCIENCE & TECHNOLOGY

Context

- Union Finance Minister Nirmala Sitharaman inaugurated the country's first 3D printed house at IIT, Madras.
- It took about 21 days to 3D print this particular structure due to COVID-related restrictions.
- Such structure can be printed in just 5 days.



What is 3D Printing?

- 3D printing uses **computer-aided design (CAD)** to create three-dimensional objects through a layering method.

Principle

- In 3D printing, a 3D printer **makes a three-dimensional object from a CAD (computer-aided design) file.**
- The creation of a 3D printed object is achieved **using additive processes.**
- In an additive process an object is created by **laying down successive layers of material until the object is created.**
- Each of these layers can be seen as a thinly sliced cross-section of the object.

- 3D printing enables us to produce complex shapes using less material than traditional manufacturing methods.

Working of a 3-D Printer

- A typical 3D printer is very much like an inkjet printer operated from a computer.
- It builds up a 3D model one layer at a time, from the bottom upward, by repeatedly printing over the same area in a method known as **fused depositional modeling (FDM)**.



Watch this Video: <https://youtu.be/3EHAeo0bm10>

What kind of "ink" does a 3D printer use?

- The 3-D printer **deposits layers of molten plastic or powder and fuses them together (and to the existing structure) with adhesive or ultraviolet light.**
- The most common 3D printing raw materials are the commodity **thermoplastic polymers:**
- Acrylonitrile butadiene styrene (ABS)
- Polylactic acid (PLA)
- Polyethylene terephthalate glycol-modified (PETG).
- These materials, made in huge quantities by the global chemicals and plastics industry, are readily available, **relatively inexpensive.**
- The most readily available **metallic raw materials** are **aluminium and bronze powders, selected grades of stainless steels, a few aluminum alloys, cobalt-chromium compounds and a limited number of titanium alloys.**

Benefits of 3 D Printed House

- Potentially reduces overall construction cost significantly
- Order of magnitude difference in overall construction time
- Brings down the related carbon footprint
- Increases productivity of labour involved
- Offers raw material flexibility/ utilisation of eco-friendly materials.

Applications of 3 D Printing

- Some interesting examples of 3D-printed objects include, but are not limited to: -
 - Prosthetic limbs and other body parts
 - Homes and other buildings
 - Food
 - Medicine
 - Firearms
 - Liquid structures
 - 3D printing clearly has applications in many industries.
 - Glass products
 - Acrylic objects
 - Movie props
 - Musical instruments
 - Clothing
 - Medical models and devices

Advantages of 3 D Production Process

- **Faster production** - 3D printing can manufacture parts within hours, which speeds up the prototyping process.
- **Easily accessible** - 3D printing has exploded since around 2010. There are now a wide variety of printers and software packages available making it easy for almost anyone to learn how to do it.
- **Better quality products** - 3D printing produces a consistent quality of product. So long as the model is accurate and the same type of printer is used, the final product will usually always be of the same quality.
- **Great for design and product testing** - 3D printing is one of the best tools for product design and testing. It offers opportunities to design and test models to allow refinement with ease.

- **Cost-effective** - 3D printing, can be a cost-effective means of production. Once the model is created, the process is usually automated, and raw material waste tends to be limited.
- **Product designs are almost infinite** - The possibilities of 3D printing are almost limitless. So long as it can be designed in CAD and the printer is big enough to print it, the sky is the limit.
- **Flexible Design**- 3D printing allows for the design and print of more complex designs than traditional manufacturing processes.
- **3D printers can print using various materials** - Some 3D printers can actually blend or switch between materials. In traditional printing, this can be difficult and expensive.
- **Print on Demand**- Print on demand is another advantage as it doesn't need a lot of space to stock inventory, unlike traditional manufacturing processes. This saves **space and costs** as there is no need to print in bulk unless required.
- **Minimizing Waste**- The production of parts only requires the materials needed for the part itself, with little or no wastage as compared to alternative methods which are cut from large chunks of non-recyclable materials.
- **Environmentally Friendly** - As this technology reduces the amount of material wastage used this process is inherently environmentally friendly.
- **Advanced Healthcare**: 3D printing is being used in the medical sector to help save lives by printing organs for the human body such as livers, kidneys and hearts.

Disadvantages

- **Reduction in Manufacturing Jobs**: There could be potential reduction in human labour, since most of the production is automated and done by printers. This technology could put these manufacturing jobs at risk.
- **Limited Materials**: Not all metals or plastics can be temperature controlled enough to allow 3D printing. Thus, available selection of raw materials is not exhaustive.
- **Restricted Build Size** : 3D printers currently have small print chambers which restrict the size of parts that can be printed. Anything bigger will need to be printed in separate parts and joined together after production. This can increase costs and time.
- **Design Inaccuracies**: Some printers having lower tolerances, meaning that final parts may differ from the original design.
- **Part Structure**: With 3D printing (also known as Additive Manufacturing) parts are produced layer-by-layer. Although these layers adhere together it also means that **they can delaminate under certain stresses**.
- **Copyright Issues**: As 3D printing is becoming more popular and accessible there is a greater possibility for people to create fake and counterfeit products.

Final Thoughts

- Today, 3D printing technology is evolving as rapidly as its use cases.
- Cutting-edge technology developments, evolving value chains and market innovations are pushing 3D printing into the mainstream arena.
- According to the new Smithers report "**The Future of Global 3D Printing to 2027**" this market will rise from \$5.8 billion in 2016 to \$55.8 billion by 2027, an aggressive **annual growth rate of 23.0%**.
- The **pace of raw materials development** for 3D printing will also accelerate dramatically over the coming years.
- Improvements in materials formulations and processing techniques will make them more user friendly.
- 3D printing has the potential to **democratize the production of goods, from food to medical supplies, to great coral reefs**.
- In the future, 3D printing machines could make their way **into homes, businesses, disaster sites, and even outer space**.
- As this technology spreads, it could help **connect marginalized and difficult-to-reach populations with essential products**.
- All in all, this emerging technology has the **potential to revolutionize our societies, and transform the development sector**.

NavIC

GS-III SCIENCE & TECHNOLOGY

Context

- Recently, National Telecommunications Institute for Policy Research, Innovation and Training (NTIPRIT), conducted a webinar on the topic "NavIC – Opportunities for the Telecom Industry" in collaboration with ISRO and Telecom Industry.

About NavIC

- NavIC (Navigation with Indian Constellation) is an **autonomous regional satellite navigation system** established and maintained by ISRO.

Coverage

- It covers India and a region extending up to **1,500 km beyond Indian mainland (primary coverage area) with plans of extension.**
- An extended service area lies between the primary service area and a rectangle area enclosed by the 30th parallel south to the 50th parallel north and the 30th meridian east to the 130th meridian east.

Satellites

- The system currently consists of a **constellation of seven satellites**, with two additional satellites on ground as stand-by.
- Three of the seven satellites in constellation are located in **geostationary orbit (GEO)** and four in inclined **geosynchronous orbit (IGSO)**.

Accuracy

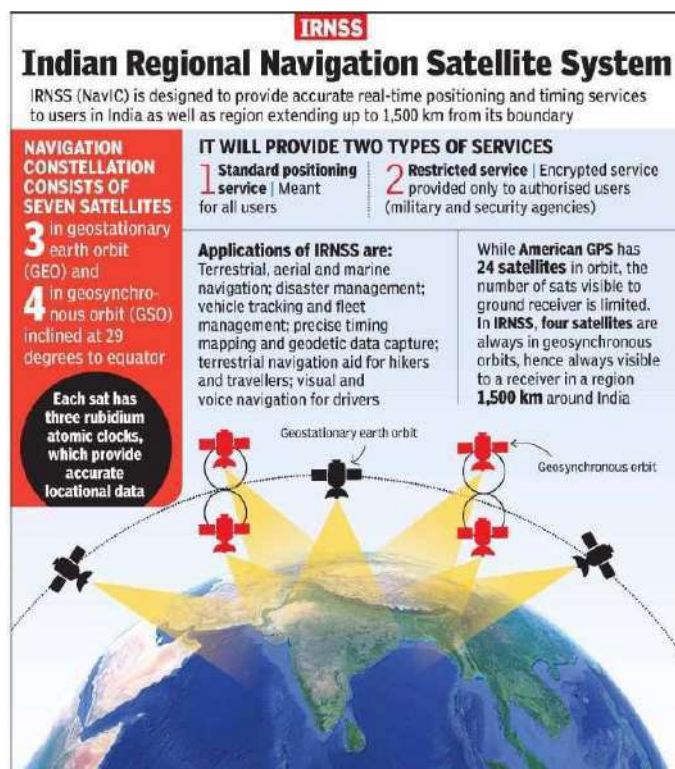
- The system is intended to provide an absolute position accuracy of better than 10 metres throughout Indian landmass and better than 20 metres in the Indian Ocean.
- In short, it provides position **accuracy better than 20 m** and **timing accuracy better than 50 nanoseconds (20).**

Applications

- NavIC will provide two levels of service, the **"standard positioning service"**, which will be open for civilian use, and a **"restricted service"** (an encrypted one) for authorised users (including the military).
- NavIC based applications are being used in various **civilian sectors, including, transport, map applications, and timekeeping.**
- NavIC based trackers are **compulsory on commercial vehicles in India.**
- A number of mobile handsets have been enabled with NavIC.

GPS VS NAVIC

- The GPS, has a position accuracy of 20–30 m.
- Unlike **GPS which is dependent only on L-band**, NavIC has **dual frequency (S and L band frequencies).**
- When low frequency signal travels through atmosphere, its velocity changes due to atmospheric disturbances.



IRNSS, India's answer to Global Positioning System, will cover a radius of 1,500km with India at the centre. Here is where India stands in a comity of space-faring nations			
GPS Country US No. of Satellites 31 Coverage Global First satellite launch 1978 Lifetime of each satellite 10 years Precision 5m	GALILEO Region European Union No. of satellites 40 (10 in orbit now) First launch 2011 Area of coverage Global Lifetime of each satellite 12 years Precision 1m for public and 1cm for military	GLONASS Country Russia No. of satellites 24 Coverage Global First satellite launch October 1982 Lifetime of each satellite 10 years Precision 5m to 10m	IRNSS Country India No. of satellites 7(5 in orbit) Area of coverage Radius of 1500km First satellite launch 2013 Lifetime of each satellite 12 years Precision 20m for civilian, 10m for military
			BEIDOU Country China Has two separate satellite constellations- limited test system and full-scale global navigation system
			No. of satellites 35 (20 now in orbit) First launch October 2000 Area of coverage global Lifetime of each satellite 12 years Precision 10m for public and 10cm for military
			India's answer to GPS No. of satellites 35 (20 now in orbit) First launch October 2000 Area of coverage global Lifetime of each satellite 12 years Precision 10m for public and 10cm for military

- US banks on atmospheric model to assess frequency error and it has to update this model from time to time to assess the exact error.
- In India's case, the actual delay is assessed by measuring the difference in delay of dual frequency (S and L bands).
- Therefore, NavIC is not dependent on any model to find the frequency error and is more accurate than GPS

About Frequency Bands

L Band

- The L band is the designation for the range of frequencies in the radio spectrum from **1 to 2 gigahertz (GHz)**.
- **Applications:** Mobile service, Satellite navigation, Telecommunications use, Aircraft surveillance, Digital audio, Video, multimedia broadcasting, Astronomy
- **Advantages of L Band Frequency over other frequency bands:** This frequency band faces less interference from heavy rain fading.

S band

- The S band is a designation for a part of the **microwave band** of the electromagnetic spectrum covering frequencies from **2 to 4 gigahertz (GHz)**.
- **Applications:** Radar for air traffic control, weather radar, surface ship radar, and some communications satellites, WiFi networks, Direct-to-Home satellite television etc.

Frequency Bands		
Letter Designation	Frequency Range	Wavelength Range
L band	1 to 2 GHz	15 cm to 30 cm
S band	2 to 4 GHz	7.5 cm to 15 cm
C band	4 to 8 GHz	3.75 cm to 7.5 cm
X band	8 to 12 GHz	25 cm to 37.5 cm
Ku band	12 to 18 GHz	16.7 mm to 25 mm
K band	18 to 26.5 GHz	11.3 mm to 16.7 mm
Ka band	26.5 to 40 GHz	5.0 mm to 11.3 mm
Q band	33 to 50 GHz	6.0 mm to 9.0 mm
U band	40 to 60 GHz	5.0 mm to 7.5 mm
V band	50 to 75 GHz	4.0 mm to 6.0 mm
W band	75 to 110 GHz	2.7 mm to 4.0 mm
F band	90 to 110 GHz	2.1 mm to 3.3 mm
D band	110 to 170 GHz	1.8 mm to 2.7 mm

About NTIPRIT

- National Telecommunications Institute for Policy Research Innovation and Training (NTIPRIT) is the **apex training institute of Department of Telecommunications**.
- It is involved in giving **training to probationary officers of Indian Telecommunication Service** recruited through All India based Engineering Services Examination conducted by UPSC.

ADITYA L-1

GS-III SCIENCE & TECHNOLOGY

In News

- A community service centre has been set up to bring all data on board India's first dedicated solar space mission to a single web-based interface enabling the users to quickly look at the data and identify the interesting science cases.
- The service centre is called Aditya-L1 Support Cell (AL1SC).
- It is a joint effort of Indian Space Research Organisation (ISRO) and Aryabhata Research Institute of Observational Sciences (ARIES) **an autonomous institute of the Department of Science & Technology**.

About Aditya L-1

- Aditya-L1 is a spacecraft mission to study the Sun.
- It will be built in collaboration between the Indian Space Research Organisation (ISRO) and various Indian research institutes.
- It is planned to be launched on the **PSLV-C56** in December 2021 or January 2022.
- It is **India's first solar mission**.

Details

- The Aditya-L1 mission will be inserted in a **halo orbit** around the L1 point, which is about 1.5 million km from Earth.

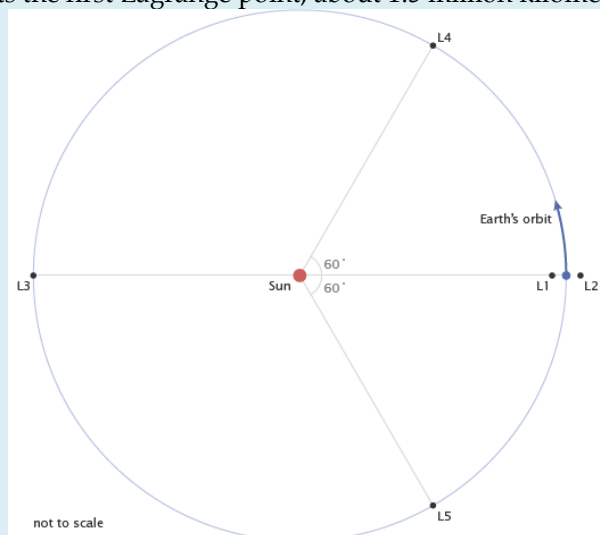
Lagrange Points – Spots beyond the High Earth Orbits

Other orbital “sweet spots,” just beyond high Earth orbit, are the Lagrange points. At the Lagrange points, the **pull of gravity from the Earth cancels out the pull of gravity from the Sun**. Anything placed at these points will feel equally pulled toward the Earth and the Sun and will revolve with the Earth around the Sun.

Of the five Lagrange points in the Sun-Earth system, **only the last two, called L4 and L5, are stable**. A satellite at the other three points is like a ball balanced at the peak of a steep hill: any slight perturbation will push the satellite out of the Lagrange point like the ball rolling down the hill. Satellites at these three points need constant adjustments to stay balanced and in place.

L-1

The first Lagrange point is located between the Earth and the Sun, giving satellites at this point a constant view of the Sun. The Solar and Heliospheric Observatory (SOHO), a NASA and European Space Agency satellite which is tasked to monitor the Sun, orbits the first Lagrange point, about 1.5 million kilometers away from Earth.



L-2

The second Lagrange point is about the same distance from the Earth, but is located behind the Earth. Earth is always between the second Lagrange point and the Sun. Since the Sun and Earth are in a single line, satellites at this location only need one heat shield to block heat and light from the Sun and Earth. It is a good location for space telescopes.

L-3

The third Lagrange point is opposite the Earth on the other side of the Sun so that the Sun is always between it and Earth. A satellite in this position would not be able to communicate with Earth. The extremely stable fourth and fifth Lagrange points are in Earth's orbital path around the Sun, 60 degrees ahead of and behind Earth.

Lagrange points are special locations where a satellite will stay stationary relative to the Earth as the satellite and the Earth revolve around the Sun. L1 and L2 are positioned above the day and night sides of the Earth, respectively. L3 is on the other side of the Sun, opposite the Earth. L4 and L5 are 60° ahead and behind the Earth in the same orbit.

To know more about Types of Orbits, Visit: <https://www.iasgyan.in/blogs/types-of-orbits-explained>

Objective of Aditya L-1 Mission

- To research the Sun's corona (Visible and Near infrared rays), photosphere (soft and hard X-ray), chromosphere (Ultra Violet rays), solar emissions, solar winds and flares, and Coronal Mass Ejections (CMEs), as well as conduct round-the-clock imaging of the Sun.
- ✓ Coronal Mass Ejections (CMEs) are large expulsions of plasma and magnetic field from the Sun's corona.

Payloads

- The 1,500 kg satellite carries seven science payloads with diverse objectives.
- ✓ Payload is the carrying capacity of an aircraft or launch vehicle, usually measured in terms of weight.
- ✓ Depending on the nature of the flight or mission, the payload of a vehicle may include cargo, passengers, flight crew, munitions, scientific instruments or experiments, or other equipment.

List of payloads and their science objective

- Visible Emission Line Coronagraph (VELC):** To measure magnetic field of solar corona and origin of Coronal Mass Ejections.
- Solar Ultraviolet Imaging Telescope (SUIT):** To image the Solar Photosphere and Chromosphere in near Ultraviolet (200-400 nm) and measure solar irradiance variations.
- Aditya Solar wind Particle Experiment (ASPEX) :** To study the variation of solar wind properties.
- Plasma Analyser Package for Aditya (PAPA):** To understand the composition of solar wind and its energy distribution .
- Solar Low Energy X-ray Spectrometer (SoLEXS):** To monitor the X-ray flares for studying the heating mechanism of the solar corona .
- High Energy L1 Orbiting X-ray Spectrometer (HEL1OS):** To observe the dynamic events in the solar corona.
- Magnetometer:** To measure the magnitude and nature of the Interplanetary Magnetic Field.

Significance

- The Sun, which controls the atmosphere of all planets in the Solar System, shows many variations in its radiations due to the activities in it.
- Hence, understanding these variations can provide clues on the origin of life, the atmosphere of exoplanets and insights into plasma – the state of matter abundant in the Universe.
- The Aditya-L1 project will enable a comprehensive understanding of the dynamical processes of the sun and address some of the outstanding problems in solar physics.
- Right now, no solar mission can measure the magnetic field of the Sun's corona as it is only observable during the eclipse. With Aditya, we can now collect this information in real-time.



INTEGRATED SOLAR DRYER AND PYROLYSIS

GS-III SCIENCE & TECHNOLOGY

Context

- Recently, the foundation stone of the **Integrated Solar Dryer and Pyrolysis** pilot was laid in Chennai.

About

- The pilot is part of the Indo-German project 'PyraSol'.
- It is launched to transform urban organic waste into biochar and energy in smart cities.

Project Implementation

- It was awarded to CSIR-CLRI by the Indo-German Science & Technology Centre.

Indo-German Science & Technology Centre (IGSTC) was established by the **Department of Science & Technology (DST)**, Govt. of India & Federal Ministry of Education and Research (BMBF), Govt. of Germany to facilitate Indo-German R&D networking with emphasis on industry participation, applied research and technology development. IGSTC through its flagship program '2+2 Projects', catalyses innovation centric R&D projects by synergising the strength of research and academic institutions and public/private industries from India and Germany.

Mandate

- The project will ultimately lead to technology development for the joint processing of **Fibrous Organic Waste (FOW) and Sewage Sludge (SS) of Indian smart cities into hygienic and highly valuable biochar.**

Area of Focus

- The project focuses on managing and organising collection, treatment, and disposal systems of urban wastes in Indian Smart Cities as well as in other urban centres with an integrated and interactive approach.

Mechanism

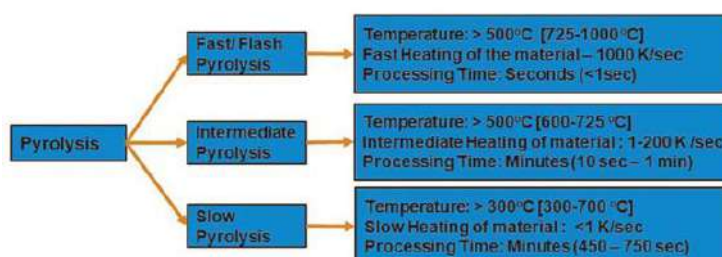
- Smart Cities integrated energy supply, carbon sequestration and urban organic waste treatment will be through **combined solar sludge drying and pyrolysis.**
- This is associated with energy recovery, carbon sequestration and environmental improvement.

Pyrolysis

- Pyrolysis is a process of chemically decomposing organic materials **at elevated temperatures in the absence of oxygen.**
- The process typically occurs at temperatures above **430 °C (800 °F) and under pressure.**
- It simultaneously involves the change of physical phase and chemical composition and is an **irreversible process.**
- The word pyrolysis is coined from the Greek words "**pyro**" which means **fire** and "**lysis**" which means separating.
- It differs from other processes like combustion and hydrolysis in that it usually does not involve the addition of other reagents such as oxygen (O₂, in combustion) or water (in hydrolysis)
- End Products:** The end products of biomass pyrolysis consist of **biochar, bio-oil and gases.**
- By-Products:** Pyrolysis process emits mainly **methane, hydrogen, carbon monoxide and carbon dioxide.**

Forms of Pyrolysis

- Extreme pyrolysis, which leaves mostly carbon as the residue, is called carbonization.
- Pyrolysis is considered the **first step in the processes of gasification or combustion.**



Applications

- Pyrolysis is most commonly used in the treatment of organic materials.
- Applications of pyrolysis include converting **biomass into syngas and biochar, waste plastics back into usable oil, or waste into safely disposable substances.**

- It is widely used in the chemical industry to **produce methanol, activated carbon, charcoal and other substances from wood.**
- Synthetic gas produced from the conversion of waste using pyrolysis can be used in gas or steam turbines **for producing electricity.**
- A mixture of stone, soil, ceramics, and glass obtained from pyrolytic waste can be **used as a building material** - construction slag or for filling landfill cover liners.
- It plays a major role in **carbon-14 dating and mass spectrometry.**
- It is also used for several cooking procedures like **caramelizing, grilling, frying, and baking.**

Advantages of Pyrolysis

- Waste management with the help of modern pyrolysis technology is inexpensive than disposal to landfills.
- It **reduces waste** going to landfill and **greenhouse gas emissions.**
- It **reduces the risk of water pollution.**
- It has the potential to **reduce the country's dependence on imported energy resources** by generating energy from domestic resources.
- It **creates several new jobs and also** provides public health benefits through waste cleanup.

Solar Dryers

- Solar dryers are devices that use solar energy to dry substances.
- Solar dryers use air heated through solar energy collectors, which can be installed in modules according to the requirements of hot air.

Types of solar dryers

Integrated solar dryers

- An integrated solar dryer is one which solar energy collection and drying take place in a single unit.
- Cabinet dryers, rack dryers, tunnel dryers, greenhouse dryers, and multi-rack dryers fall under this category.
- Normally, these dryers are small in size and are stand-alone units.

Distributed solar dryers

- A solar dryer in which solar energy collection and drying take place in separate units is known as a distributed solar dryer.

Mixed-mode solar dryers

- A solar dryer in which solar energy collection takes place in both air heater and drying unit, and drying takes place only in the drying unit, is known as a mixed-mode solar dryer.

Uses

- Solar dryers can be utilized for various domestic purposes. They also find numerous applications in industries such as textiles, wood, fruit and food processing, paper, pharmaceutical, and agor-industries.

Advantages

- Solar dryers are more economical compared to dryers that run on conventional fuel/electricity.
- The drying process is completed in the most hygienic and eco-friendly way.
- Solar drying systems have low operation and maintenance costs.
- Solar dryers last longer. A typical dryer can last 15-20 years with minimum maintenance.

Limitations

- Drying can be performed only during sunny days, unless the system is integrated with a conventional energy-based system.
- Due to limitations in solar energy collection, the solar drying process is slow in comparison with dryers that use conventional fuels.
- Normally, solar dryers can be utilized only for drying at 40-50 degree C.

Potential for solar dryers

- There is vast potential for solar dryers in the country: for drying agro-products and also for use in the fruit and food processing industries.

- Solar drying systems can also be installed for drying a variety of industrial products such as chemicals, leather, salt, plywood, and textiles.

Significance of Pyrasol Project

- Through this Pyrasol project, simple and robust processing technologies for urban organic waste will be combined in a synergetic manner and further developed.
- This will improve sanitation and welfare, supply regenerative energy, convert waste into products and reduce the carbon footprint of smart cities by an innovative organic waste drying system using the solar natural chimney effect followed by a high efficient single-chamber pyrolysis.

LIQUID OXYGEN & CRYOGENICS

GS-III SCIENCE & TECHNOLOGY

Context

- Shortage of oxygen during the second Covid wave has caused the number of deaths to rise in the country.
- In the last few weeks, there has been a lot of conversation around liquid oxygen, medical oxygen, oxygen concentrators and so on.

Liquid Oxygen

- Liquid oxygen is a cryogenic liquid. Cryogenic liquids are liquefied gases that have a normal boiling point below **-130°F (-90°C)**.
- Liquid oxygen has a **boiling point of -297°F (-183°C)**.
- Liquid oxygen has a **pale blue color** and is **strongly paramagnetic**: it can be suspended between the poles of a powerful horseshoe magnet.
- Because of its cryogenic nature, liquid oxygen can **cause the materials it touches to become extremely brittle**.
- Liquid oxygen is also a **very powerful oxidizing agent**: organic materials will burn rapidly and energetically in liquid oxygen.

Table 1: Liquid Oxygen Physical and Chemical Properties

Molecular Formula	O ₂
Molecular Weight	31.999
Boiling Point @ 1 atm	-297.4°F (-183.0°C)
Freezing Point @ 1 atm	-361.9°F (-218.8°C)
Critical Temperature	-181.8°F (-118.4°C)
Critical Pressure	729.1 psia (49.6 atm)
Density, Liquid @ BP, 1 atm	71.23 lb/scf (1141 kg/m ³)
Density, Gas @ 68°F (20°C), 1 atm	0.0831 lb/scf (1.33 kg/m ³)
Specific Gravity, Gas (air=1) @ 68°F (20°C), 1 atm	1.11
Specific Gravity, Liquid (water=1) @ 68°F (20°C), 1 atm	1.14
Specific Volume @ 68°F (20°C), 1 atm	12.08 scf/lb (0.754 m ³ /kg)
Latent Heat of Vaporization at BP	91.7 Btu/lb (213 KJ/Kg)
Expansion Ratio, Liquid to Gas, BP to 68°F (20°C)	1 to 860
Solubility in Water @ 77°F (25°C), 1 atm	3.16% by volume

Producing liquid medical oxygen

- Liquid Oxygen is produced by an air separation unit (ASU) through liquefaction of atmospheric air and separation of the oxygen by continuous cryogenic distillation.
- Atmospheric air is first cooled to minus **181° degrees Celsius**. Oxygen liquefies at this point.
- Nitrogen, which is the major component of air, remains in a gaseous state since its boiling point is minus 196 degrees Celsius, but a significant amount of argon liquefies along with oxygen.
✓ Argon is the third-most abundant gas in the Earth's atmosphere.
- The resultant mixture of oxygen and argon is drained, decompressed and passed through a second low-pressure distillation vessel for further purification.
- We then finally get purified liquid oxygen that is transported using cryogenic containers.

What is Cryogenics?

- Cryogenics is the production of and behavior of materials at very low temperatures.
- Ultra-cold temperatures change the chemical properties of materials.
- The most common gases that are turned to liquid for cryogenics are **oxygen, nitrogen, hydrogen and helium**.

What Is Cryogenics Used For?

- Cryogenics is used in a variety of applications. It can be used to produce cryogenic fields for **rockets, in MRI machines that use liquid helium and require cryogenic cooling, storing large quantities of food, special effects fog, recycling, freezing blood and tissue samples, and even cooling superconductors.**

Applications and uses

- Cryosurgery:** A type of surgery that uses cryogenic temperatures to eliminate unwanted tissue or tumors.
- Cryoelectronics:** This is of great benefit for superconductors and in spacecraft design.
- Cryobiology:** The study of the effects of low temperatures on organisms. There are six major areas of cryobiology:
 - ✓ The study of cold-adaptation of microorganisms, plants, animals and vertebrates
 - ✓ Cryopreservation of cell tissues and embryos used in invitro fertilization, Preservation of organs
 - ✓ **Lyophilization** -the freeze-drying of pharmaceuticals
- Food Preservation** To preserve packaged foods such as produce, the food items can be sprayed with liquid nitrogen to absorb the heat within the produce. Eventually, the nitrogen evaporates before the food is consumed.
- Transportation of Gases** For example, using cryotechnology, gases can be transformed into liquids to make them easier to transport from one place to another.
- Cryotherapy.** This is when the body is exposed to extremely cold temperatures. Studies have shown that this treatment reduces inflammation, increasing energy, managing pain, and even can boost metabolism, amongst other claims.
- Cryonics** The cryo-preservation of animals and humans with the hope that one day they may be able to be resuscitated in the future.

Cryogenic Containers

- Cryogenic liquid containers, are double-walled vacuum vessels with multilayer insulation in the annular space.
- They are designed for the reliable and economic transportation and storage of liquefied gases at cryogenic temperatures, typically colder than -130°F (-90°C).
- Liquid containers operate at pressures up to 350 psig (24 atm) and have capacities between 80 and 450 liters of liquid.
- There are two primary advantages of a liquid container.
 - ✓ It contains a large volume of gas at a relatively low pressure compared to a compressed gas cylinder.
 - ✓ It provides a source of cryogenic liquids which can be easily handled.
- The cryogenic products normally found in liquid containers are **liquid nitrogen (LIN), liquid argon (LAR), liquid oxygen (LOX), and liquid helium (LHE).**

Oxygen Concentrator

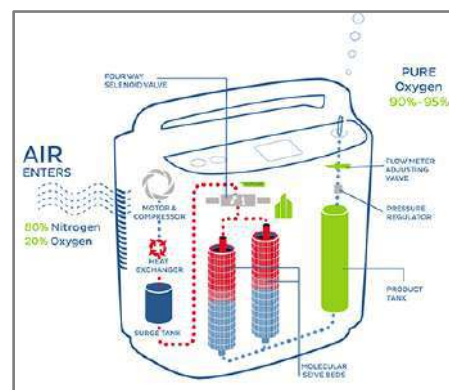
- An oxygen concentrator is a device that concentrates the oxygen from a gas supply (typically ambient air) by selectively removing nitrogen to supply an oxygen-enriched product gas stream.
- The oxygen, compressed and dispensed through a cannula, is **90-95 percent pure.**
- Two methods in common use are **pressure swing adsorption and membrane gas separation.**

Pressure Swing Adsorption

- In this, Specific adsorbent materials (e.g., **zeolites, activated carbon, molecular sieves, etc.**) are used as a trap, preferentially adsorbing the target gas species at high pressure.

Membrane Gas Separation

- Gas mixtures can be effectively separated by synthetic membranes made from polymers such as **polyamide or cellulose acetate, or from ceramic materials.**



In News

- Four astronauts were launched to the International Space Station (ISS) from Florida as part of collaboration between **NASA and SpaceX** under the **Commercial Crew Program**.
- The mission is called Crew-02.

Background

Space X

- Space Exploration Technologies Corp. (SpaceX) is an American aerospace manufacturer and space transportation services company.
- It was founded in **2002 by Elon Musk** with the goal of reducing space transportation costs to **enable the colonization of Mars**.
- SpaceX manufactures the **Falcon 9 and Falcon Heavy launch vehicles, several rocket engines, Dragon cargo and crew spacecraft and Starlink communications satellites**.

Commercial Crew Program (CCP)

- The Commercial Crew Program (CCP) is a **human spaceflight program** operated by NASA, in association with American aerospace manufacturers Boeing and SpaceX.
- **Mandate:** The program **conducts crew rotations by transporting crews to and from the International Space Station (ISS) operated by private companies**.
- **Objective:** **To make access to space easier in terms of its cost**, so that cargo and crew can be easily transported to and from the ISS, **enabling greater scientific research**.
- **Significance:** By encouraging private companies such as Boeing and SpaceX to provide crew transportation services to and from low-Earth orbit, NASA can focus on building spacecraft and rockets meant for deep space exploration missions.

What did Crew-1 do at the ISS?

- In November 2020, Crew-1 team members conducted **microgravity studies at the ISS**.
- Some of the research that the crew carried with themselves included
 - ✓ materials to investigate food physiology meant to study the effects of dietary improvements on immune function and the
 - ✓ gut microbiome and how those improvements can help crews adapt to spaceflight.

What will Crew-2 do at the ISS?

- Crew-2 astronauts will stay aboard the ISS for six months during which time they will conduct science experiments in low-Earth orbit of ISS.
- The **aim** of this test flight was to see **whether SpaceX capsules could be used to shuttle astronauts to and from the International Space Station on a regular basis**.
- Also, their central focus during this time will be to continue a series of **Tissue Chips in Space studies**.
 - ✓ Tissue Chips are small models of human organs that contain multiple cell types that behave similarly to the human body.
- According to NASA, **these Tissue chips can potentially speed up the process of identifying safe and effective drugs and vaccines**.
- In addition, many changes occurring in the human body during spaceflight resemble the onset and progression of aging and diseases on Earth but occur much more quickly in microgravity.
- Therefore, scientists can use these tissue chips in space to study diseases that affect specific human organs.

Context

- NASA's **Perseverance Mars Rover** extracted oxygen from the Red planet for the first time.
- Recently, Ingenuity helicopter became the first aircraft to fly in Mars as well. It hovered at an altitude of three meters for some 30 seconds.

Perseverance Rover

- Perseverance, nicknamed Percy, is a car-sized Mars rover designed to explore the **Jezero crater on Mars** as part of NASA's **Mars 2020 mission**.
- The rover successfully landed on Mars on February 18, 2021.
- Following the rover's arrival, NASA named the **landing site Octavia E. Butler Landing**.
- Perseverance has a similar design to its predecessor rover, Curiosity, from which it was moderately upgraded.
- Percy carries **seven primary payload instruments, 19 cameras, and two microphones**.
- The rover also carried the **mini-helicopter Ingenuity to Mars**.
- It is an experimental aircraft and technology showcase that recently made the **first powered flight on another planet**.
- On 30 April 2021, Perseverance became the **first spacecraft to hear and record sounds of another separate spacecraft nearby by recording audio during Ingenuity's flight**.
- The rover's goals include
 - ✓ identifying ancient Martian environments capable of supporting life,
 - ✓ seeking out evidence of former microbial life existing in those environments,
 - ✓ collecting rock and soil samples to store on the Martian surface, and
 - ✓ testing oxygen production from the Martian atmosphere to prepare for future crewed missions.



INGENUITY HELICOPTER

Martian Climate

- On Mars, **carbon dioxide makes up ~96% of the gas in the planet's atmosphere**. Oxygen is only 0.13%, compared to 21% in Earth's atmosphere.

How did Perseverance produce oxygen on Mars?

- The **Mars Oxygen In-Situ Resource Utilization Experiment (MOXIE)** - a device aboard the Perseverance Rover produced 5 grams of oxygen from carbon dioxide in the Martian atmosphere.
- This is enough for an astronaut to breathe for 10 minutes.

MOXIE

- It is the size of a car battery, weighing 17.1 kg on Earth, but just 6.41 kg on Mars.
- MOXIE was able to demonstrate that it survived its launch from Earth, an almost seven-month journey through deep space, and landing on the Martian surface with Perseverance.
- Over the next two years, MOXIE is expected to extract oxygen nine more times.
- MOXIE is only a test model. Future oxygen generators that descend from its technology need to be about 100 times larger to support human missions on Mars.

Mechanism

- To produce oxygen, MOXIE separates oxygen atoms from carbon dioxide molecules.
- It does so by using **heat at a temperature of around 800 degrees Celsius**, and in the process also produces **carbon monoxide as a waste product**, which it releases in the Martian atmosphere.
- MOXIE is designed to **generate up to 10 grams of oxygen per hour**, and is placed inside the Perseverance rover.

Significance of producing Oxygen on Mars

- A substantial amount of oxygen supply on Mars is essential for crewed missions that plan to go there
 - ✓ One for astronauts to breathe
 - ✓ And two for rockets to use as fuel while coming back to Earth.
- For four astronauts to take off from Mars, a future mission would require around **7 metric tons of rocket fuel and 25 metric tons of oxygen**— around the weight of an entire space shuttle.
- In contrast, astronauts living and working on Mars would require far less oxygen to breathe, maybe **around one metric ton**.
- It will be an enormous challenge to haul the 25 metric tons of oxygen from Earth to Mars for the return journey, and that their job would become significantly easier if the liquefied oxygen can be produced on the Red Planet. This is where MOXIE's role comes in.
- The idea is to bring an empty oxygen tank and fill it up on Mars.
- Thus, MOXIE's feat is a critical first step at converting carbon dioxide to oxygen on Mars.

CHIMERA RESEARCH

GS-III SCIENCE & TECHNOLOGY

In News

- Researchers at the Salk Institute for Biological Studies in the US have for the **first time grown human cells in monkey embryos**.
- By integrating human cells into the embryos of macaque monkeys, researchers have created what is called a **chimeric tool**.

About

- Chimeras are **organisms that are made up of the cells of two distinct species**, in this case humans and monkeys.
- For instance, if this hybrid embryo was placed in the womb of a monkey, it could possibly grow into a new kind of an animal.
- In this study, the monkey embryos containing human stem cells stayed alive and grew outside the body for a period of 19 days.

Rationales for Chimeric Research

- It offers scientists a powerful tool for **research and medicine**, advancing current understanding about early human **development, disease onset and progression and ageing**.
- It could help in **drug evaluation and address the critical need for organ transplantation**.
- Chimeric tools provide a new **platform to study how certain diseases arise**.
- For instance, a particular gene that is associated with a certain type of cancer could be engineered in a human cell. Researchers could then study the course of disease progression using the engineered cells in a chimeric model.
- Human-monkey chimeras could be created to study parts of the brain, for instance, so we can **better understand Alzheimer's Disease**.
- Another goal is to **grow human organs for transplantation** by "deleting" the relevant organ from the animal's genetic instructions, and replacing it with human stem cells to fill the developmental niche.

Associated Ethical Concerns

Survival of Hybrid Animals

- Some rare hybrid animals exist naturally due to unintentional cross breeding between animals of different species.
- In 2014, a rare hybrid animal called “Geep” was born in an Irish farm. Geep was a hybrid between a goat and a sheep, a result of the two mating.
- Generally, different species don’t cross-breed and if they do, their offspring don’t survive for long.

Reproduction of Hybrid Animals

- Mules are another example of a hybrid animal that are the result of mating between a female horse and a male donkey.
- While mules can live a long healthy life, they are infertile which means that they cannot have offspring of their own.

Societal Acceptance

- After further research into chimeras it could be used as a source of organs for humans.
- As these chimeras would still be a mix of human and non-human cells, this thought that makes many uncomfortable.

Injustice to other organisms

- Chimeric research raises “the philosophical and ethical issue of moral status: **how should we treat other life forms?**”.
- Chimera research has the potential to worsen injustice against animals and also point out the fairness in using part-human animals to meet human needs.

Moral Revulsion

- If pigs or monkeys are eventually developed with humanised features, it could cause major public opprobrium, perhaps setting back public acceptance of science significantly.

Moral status

- Moral status is the concept of treating life forms according to their capacities.
- In the future, some human-nonhuman chimeras could develop mental capacities between ordinary animals and humans. That presents a huge challenge for determining their moral status and rights and obligations.
- Recent work on “speciesism” makes a compelling case that we have wrongly assigned animals a lower moral status.
 - ✓ ‘Speciesism’ is the idea that being human is a good enough reason for human animals to have greater moral rights than non-human animals.
- Thus, human-nonhuman chimeras will probably be regarded as “lesser” than humans.

Hybrid futures

- In future, chimera discoveries could give humans capacities found elsewhere in the animal kingdom, like a bat’s sonar.
- If we accept moral status based on a creature’s capacities, such enhanced humans could one day be regarded as **superior to us**.
- As we’re already struggling with issues of equality between human beings, it would seem we’re poorly prepared for the ethical challenges presented by future advances in chimera research.

Conclusion

- Genetic modification like chimera studies continues to be a subject of major debate.
- Production of hybrid animals is **banned in India since 1985**.
- In developing countries like India, even genetically modified crops are a contentious topic.
- Tampering with the genetic code in human beings is more controversial, as any such change can be passed down to future generations.
- Government should develop policy that adequately addresses ethical challenges such as animal welfare, human dignity before giving a green signal to this sort of Research.

GAGANYAAN

GS-III SCIENCE & TECHNOLOGY

Context

- Space agencies of India and France on Thursday signed an agreement for cooperation for the former's first human space mission, Gaganyaan.
- This move will enable Indian flight physicians to train at French facilities.

Highlights of the Agreement

- Equipment developed by France along with fireproof carry bags will be made available to Indian crews.
- CNES will serve as **its single European contact in this domain**.
- CNES will **train India's flight physicians and mission control teams** in France.

Gaganyaan

About

- Gaganyaan is an **Indian crewed orbital spacecraft** that is intended to send 3 astronauts to space for a minimum of seven days by 2022, as part of the Indian Human Spaceflight Programme.
- The spacecraft, which is being developed by the Indian Space Research Organisation (ISRO), consists of a service module and a crew module, collectively **known as the Orbital Module**.
- It will be for the **first time that India** will launch its manned mission to space.

Launch Vehicle

- GSLV Mk-III (Geosynchronous Satellite Launch Vehicle)** the **three-stage cryogenic heavy-lift launch vehicle** will be used for carrying the orbital module.
- Note:** This three-stage heavy lift launch vehicle, named **GSLV MkIII-M1**, was used for launching Chandrayaan-2.
- GSLV Mk III is designed to carry **4 ton class of satellites** into Geosynchronous Transfer Orbit (GTO) or about **10 tons to Low Earth Orbit (LEO)**.

Placement

- The spacecraft will be placed in a **low earth orbit of 300-400 km**.
- The human spaceflight will take 16 minutes to reach the orbit where it will stay for five to seven days.
- The capsule will rotate around the Earth every 90 minutes. The three astronauts will be able to see India from space every 24 hours.

Suit

- With the ability to hold one oxygen cylinder, the suit will allow the astronaut to breathe in space for 60 minutes.

Return

- For its return, the capsule will take 36 hours, and will land in the Arabian Sea, just off the coast of Gujarat.

Vyommitra

- ISRO has also developed a **female half humanoid robot named Vyommitra**, which will be sent on the first unmanned Gaganyaan flight.
- Vyommitra has been designed to speak in Hindi and English, can act as a companion to the astronauts, converse with them, and also respond to their queries.

Significance

- If Gaganyaan mission is a success, India will become the **fourth country** to have conducted human spaceflights after the US, Russia, and China.



- The programme would **spur research and development within the country in niche science and technology domains.**
- ISRO has **developed some critical technologies** like re-entry mission capability, crew escape system, crew module configuration, thermal protection system, deceleration and flotation system, sub-systems of life support system required for Mission Gaganyaan.
- The human spaceflight programme will be a **test bed for future technologies.**
- It has potential for **technology spinoffs** in several areas such as **medicine, agriculture, industrial safety, pollution, waste management, water and food resource management through this programme.**
- The mission will lead to **employment generation, human resource development, and enhanced industrial capabilities.**
- It will enable India to participate as a collaborating partner in **future global space exploration activity.**
- It will also **inspire a large number of young students** to take up science and technology careers for national development.
- The mission will be a turning point in India's space journey.

WOLF-RAYET STARS

GS-III SCIENCE & TECHNOLOGY

Context

- Indian astronomers have tracked a rare supernova explosion and traced it to one of the hottest kind of stars called **Wolf-Rayet stars or WR stars.**

About

- The rare Wolf-Rayet stars are highly luminous objects a thousand times that of the Sun.
- The luminosity is due to prominent **broad emission lines of ionised helium and highly ionised nitrogen or carbon.**
- The spectra indicate very high surface enhancement of heavy elements, **depletion of hydrogen**, and strong stellar winds.
- The surface temperatures of known Wolf-Rayet stars range from **30,000 K to around 210,000 K**, hotter than almost all other kinds of stars.
- They are massive stars and strip their outer hydrogen envelope out.
- This envelope is associated with the fusion of Helium and other elements in the massive core.



Supernova

- **What is it -** A supernova is the explosion of a star. It is the largest explosion that takes place in space.
- **Occurrence -** A supernova happens where there is a change in the core, or center, of a star.
- **Types -** A change can occur in two different ways, with both resulting in a supernova.
- **Type-1**
 - The first type of supernova happens in binary star systems.
 - Binary stars are two stars that orbit the same point.
 - One of the stars, a carbon-oxygen white dwarf, steals matter from its companion star.
 - Eventually, the white dwarf accumulates too much matter.
 - Having too much matter causes the star to explode, resulting in a supernova.
- **Type- 2**
 - The second type of supernova occurs at the end of a single star's lifetime.
 - As the star runs out of nuclear fuel, some of its mass flows into its core.
 - Eventually, the core is so heavy that it cannot withstand its own gravitational force.

- The core collapses, which results in the giant explosion of a supernova.
- The sun is a single star, but it does not have enough mass to become a supernova.
- **Detection**
 - Supernovas are often seen in other galaxies. But supernovas are difficult to see in our own Milky Way galaxy because dust blocks our view.
 - In 1604, Johannes Kepler discovered the last observed supernova in the Milky Way.
- **Why study them?**
 - A supernova burns for only a short period of time, but it can tell scientists a lot about the universe.
 - One kind of supernova has shown scientists that we live in an expanding universe, one that is growing at an ever increasing rate.
 - Supernovas play a key role in distributing elements throughout the universe. When the star explodes, it shoots elements and debris into space.
 - Many of the elements we find here on Earth are made in the core of stars.
 - These elements travel on to form new stars, planets and everything else in the universe.

MUONS AND STANDARD MODEL

GS-III SCIENCE & TECHNOLOGY

Context

- An International experiment called Muon g-2 (g minus two) which studied a subatomic particle called the muon, do not match the predictions of the Standard Model, on which all particle physics is based.

What is the Standard Model?

- The Standard Model of particle physics is the theory describing three of the four known fundamental forces (the electromagnetic, weak, and strong interactions, and not including gravity) in the universe, as well as classifying all known elementary particles.
- The Standard Model is a rigorous theory that **predicts the behaviour of the building blocks of the universe**.
- It accounts for the accelerating **expansion of the Universe as possibly described by dark energy**.
- It lays out the rules for **six types of quarks, six leptons, the Higgs boson, three fundamental forces, and how the subatomic particles behave under the influence of electromagnetic forces**.
- It explains how particles called quarks (which make up protons and neutrons) and leptons (which include electrons) make up all known matter.
- It also explains how force carrying particles, which belong to a broader group of bosons, influence the quarks and leptons.
- The muon is one of the leptons.

Muon and its Features

- The muon is an **elementary particle similar to the electron**, with an electric charge of $-1e$ and a spin of $1/2$, but with a much greater mass.
- It is **classified as a lepton**. As with other leptons, the muon is **not known to have any sub-structure** – that is, it is not thought to be composed of any simpler particles.
- The **muon is an unstable subatomic particle** with a mean **lifetime, much longer than many other subatomic particles**.
- Muon **decay is slow** because the decay is mediated only by the weak interaction (rather than the more powerful strong interaction or electromagnetic interaction).
- Muon decay produces at least three particles, which must include **an electron of the same charge as the muon and two types of neutrinos**.
- Like all elementary particles, the muon **has a corresponding antiparticle of opposite charge ($+1e$)**.
- Muons are denoted by μ^- and antimuons by μ^+

- Muons have a **mass which is approximately 207 times that of the electron**.
- Due to their greater mass, **muons accelerate more slowly than electrons in electromagnetic fields**.
- This allows **muons of a given energy to penetrate far deeper into matter**.
- Because **muons have a greater mass and energy than the decay energy of radioactivity**, they are not produced by radioactive decay.
- However they are **produced in great amounts in high-energy interactions in normal matter**, in certain particle accelerator experiments with hadrons, and in cosmic ray interactions with matter.

The Experiment

- The Muon g-2 experiment measured a quantity relating to the muon with greater accuracy.
- The experiment came up with results that did not identically match predictions by the Standard Model.

What quantity was measured?

- It is called the g-factor, a measure that derives from the magnetic properties of the muon.
- Because the muon is unstable, scientists study the effect it leaves behind on its surroundings.
- Muons act as if they have a tiny internal magnet. In a strong magnetic field, the direction of this magnet “wobbles” – just like the axis of a spinning top.
- The rate at which the muon wobbles is described by the g-factor, the quantity that was measured. This value is known to be close to 2, so scientists measure the deviation from 2. Hence the name g-2.







Findings

- The results, while diverging from the Standard Model prediction.

Implications

- It hints at the existence of unknown interactions between the muon and the magnetic field – interactions that could involve new particles or forces.
- To claim a discovery, scientists require results that diverge from the Standard Model by 5 standard deviations. But here, divergence was by 4.2 standard deviations.

OUR INITIATIVES

CIVIL DEFENCE VOLUNTEERS**GS-III SECURITY & DEFENSE****Introduction**

- From being lauded for their work during the pandemic to facing allegations of high-handedness, the role of the civil defence volunteers in the national capital has come under intense scrutiny recently.

What is the issue?

- Due to their **identical khaki uniform**, it often becomes difficult for people to **distinguish between police and civil defence personnel**, leading to arguments.
- One such incident recently turned into a full blown fist-fight between a group of civil defence personnel and general public near IIT-Delhi.
- The Delhi Police clarified **civil defence volunteers have no power to stop people using police barricades and prosecute them** for violation of Covid-19 appropriate behaviour such as not wearing masks.

Who are civil defence volunteers?

- In Delhi, these are men and women, **who work under the command of the district magistrates**.
- The overall command lies with the divisional commissioner, to which the DMs report.
- These volunteers are governed by the **Civil Defence Act, 1968** which has undergone multiple amendments, with the latest being in 2010, when disaster management was added as one of their roles.
- With the Centre invoking the **Disaster Management Act** in the wake of the Covid-19 outbreak in 2020, the role of these volunteers came under the spotlight.

What is the primary role of civil defence volunteers?

- According to the Civil Defence Act, 1968, civil defence is defined as any measure “not amounting to actual combat, that protects persons, property and places in India from hostile attack.
- The 2010 amendment expanded the definition by including disaster management as one of the responsibilities.
- The basic role of the volunteers is to assist the local administration.
- During the pandemic, the volunteers assumed the role of frontline workers by way of participating in screening hotspots and distributing food for the needy.
- Before the Covid outbreak, a large number of DCD personnel were deployed as marshals in public buses to ensure safety of women.

Doesn't the role of DCDs overlap with that of home guards?

- In some ways, yes. However, in Delhi, Directorate of Civil Defence was carved out of the Directorate of Home Guards through a 2009 notification issued by the then Lieutenant Governor.
- In a city like Delhi, which is not only a metropolitan city but also serves as national capital, it is mandatory that the organizations like Civil Defence must be strengthened to face the problems of terrorism and disaster inch to inch i.e., from earthquake to collapse of buildings.

How are civil defence volunteers recruited?

- Recruitment drives are carried out from time to time by the Delhi government.
- Anyone aged above 18 years with primary level educational qualification can apply. In most cases, those who have passed Class 8 are preferred.
- The candidates found eligible are made to undergo a week-long basic training course. At later stages, specialized training is also imparted.
- A person who intends to apply must also be a **citizen of India or a “subject of Sikkim or Bhutan or Nepal”**, according to the Act.

VOLUNTEERS: BOON OR BANE?




Photos: Tarun Nimal

1.1 lakh Approximate volunteers enrolled with Delhi Civil Defence

2.4 lakh Sanctioned number of volunteers

35,000 Approximate volunteers on active duty at present, including as bus marshals

5,000 Volunteers deployed during implementation of odd-even road rationing schemes

₹783 Allowance provided to a volunteer for a day's duty

ROLE OF CIVIL DEFENCE

- Originally set up for war-time services, the ambit of Civil Defence Corps was later expanded to include rescue services, first-aid, communication, welfare measures, relief work, transport, training and mobilisation
- of local help, etc. during disasters and calamities
- Civil Defence is primarily organised on voluntary basis except for a small nucleus of paid staff and establishment, which is augmented during emergencies

SERVICES PROVIDED DURING COVID-19 OUTBREAK

- Checking entry and doorstep delivery of essentials into containment zones
- Helping authorities in ensuring social distancing in public places
- Assisting authorities in enforcement drives for



- wearing face masks
- Deployment at quarantine facilities
- Distribution of food at centres for the poor
- Crowd control at ration distribution centres

FIGHTING LEFT WING EXTREMISM IN CHHATTISGARH

GS-III SECURITY & DEFENSE

Context

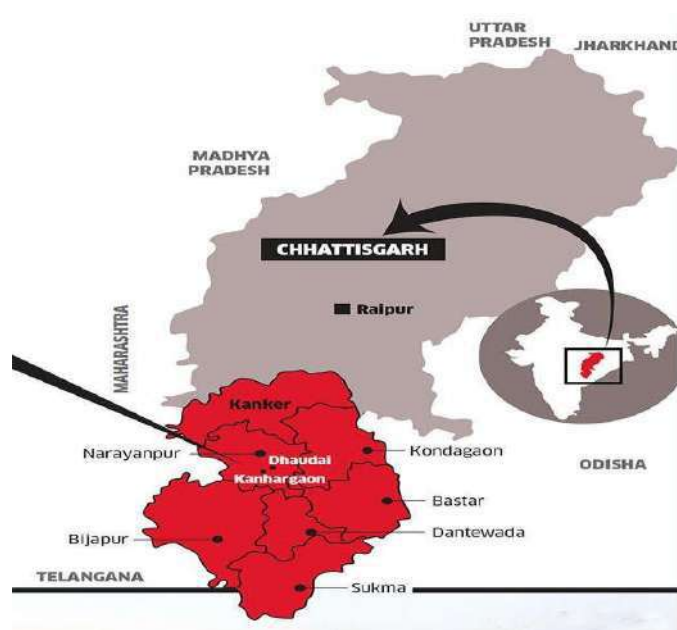
- On April 3, as 22 security force personnel fell to Maoist bullets in Bijapur, questions were raised not just on possible tactical mistakes by the forces but also on Chhattisgarh's continued struggle in driving out Maoists from what is arguably their last bastion.

More about news

- Since the **2010 Chintalnar massacre** that claimed 76 lives, the **Dantewada-Sukma-Bijapur axis** has claimed the lives of more than 175 security personnel in Maoist ambushes alone.
- Since a crackdown on Maoists starting 2005 in Left Wing Extremism (LWE) states, other states have largely tackled the problem.
- The **number of districts declared Naxal-affected is now just 90, down from over 200 in the early 2000s.** Yet Chhattisgarh struggles.

State police role is key

- Many have argued that Maoism has been defeated



only in states where the state police have taken the lead.

- In Maharashtra, where Maoists held sway over several districts, they have now been confined to border areas of Gadchiroli thanks to local police and the C60 force.
- West Bengal achieved normalcy through an ingenious strategy adopted by the state police.
- The Jharkhand Jaguars have gained an upper hand in the past few years, and Odisha has confined Maoist activity largely to Malkangiri thanks to broad administrative interventions in Koraput.
- Central forces have the numbers and the training, but they have no local knowledge or intelligence.
- Only local police can drive out Maoists.
- The reason we are not succeeding in Chhattisgarh is because the local police have not yet taken the leadership position, although things have improved over the years.

Greatest internal security threat

- The Centre formally recognised the gravity of Maoist violence in 2004 when then PM Manmohan Singh called it the “greatest internal security threat for the country”.
- The Centre opened up purse strings for modernisation of state police forces, among various moves.
- When Maoist violence began in the 1980s, the Andhra police were poorly trained, inadequately funded and with no intelligence as public support was with the Maoists.
- Given that the Maoist movement initially had only landlords at its target, the state was late to react and after several setbacks to police, the state realised the importance of capacity building and “Work began on the principle of Defend, Destroy, Defeat and Deny.”
- In 1989, the Greyhounds were formed. It carried out intelligence-based operations against Maoists, while police and paramilitary personnel were pushed to hold and re-establish the rule of law in the areas cleared.
- This was coupled with a focus on development. A department called Remote and Interior Area Development Department was set up.
- The SP of the region was made an integral part of the Development Board to take decisions on roads etc. When all administrative wings become focused on one job, the punch of the government becomes mightier.

Different state models

West Bengal

- West Bengal, the cradle of Naxalism, had stamped out Maoism in early 1970s, but it came back by the late 1990s, when Maoists began targeting CPM cadre in some districts.
- Maoists were eventually driven out by state police with **robust use of technology and intelligence**.

Odisha & Maharashtra

- There was a time in Odisha during the early 2000s when armouries of police stations in Koraput and Malkangiri were kept empty for fear of raids by Maoists.
- Thanks to rapid infrastructure development, particularly roads in Koraput, and killing of key Maoist leaders, Odisha police have confined Maoist activity to parts of Koraput and Malkangiri.
- Police have raised a force called the **Special Operations Group to fight Maoists**. However, due to proximity with Chhattisgarh, some trouble continues.
- Its elite commando force to fight Naxals, the **C60**, was raised back in 1991, and **trained by the National Security Guards and at the Jungle Warfare Academy in Mizoram**.

Bihar & Jharkhand

- The two states continue to have Maoist trouble in some districts, but violence has been going down.
- **Jharkhand Jaguars** have coordinated well with the central forces and together they have restricted the movement of Maoist leaders and cadres.

The Chhattisgarh challenge

- Trouble in Chhattisgarh started after Maoists began to be smoked out of Andhra Pradesh in the early 2000s.

- It was also the time when the Maoist movement went through a transformation of being a struggle against a class enemy (landlords) to a tribal movement against the state.
- It was also a **different kind of challenge** since Maoists had made **strongholds in areas that had not even been mapped, let alone be administered.**
- Between 2018 and 2020, Chhattisgarh has accounted for 45% of all incidents in the country and 70% of security personnel deaths in such incidents.
- Chhattisgarh is a different challenge. The terrain and demography is different from Andhra.
- **Public have more sympathy for the Maoists** there.
- **SalwaJudum turned out to be counter-productive** and information sources dried up after that.
- Also, the enemy strength is huge in Chhattisgarh."
- The Chhattisgarh police too have raised a special counter-Maoist force, called **District Reserve Guards (DRG).**
- It is, however, relatively new and constituted differently than the Greyhounds.
- It has **tribal recruits from Bastar and employs surrendered Maoists too.**
- It has its advantages vis-à-vis local knowledge and intelligence gathering.

What is naxalism?

- It refers to the **use of violence to destabilize the state through various communist guerrilla groups.**
- In India it is prevalent in Red Corridor which spread from Andhra Pradesh to Nepal Border
- These far-left radical communists derive their political ideology from the teachings of Mao Zedong, a Chinese revolutionary leader
- This movement **originated in 1967 in naxalbari village of West bengal under the leadership of CharuMajumdar and KanuSanyal.**
- Their core objective is to **establish People's Revolutionary State and advancement of people's social & economic life by establishing classless society through armed revolution.**

Causes of naxalism

- **Displacement and Forced Evictions of tribal:** Large scale land acquisition for 'public purposes' without appropriate compensation or rehabilitation.
- **Lack of Economic Development:** Disruption of traditional occupations and lack of alternative work opportunities, Deprivation of traditional rights in common property resources and forest.
- **Social Exclusion:** High illiteracy, high MMR and IMR. Lack of better education and health facilities and Poor implementation of special laws for tribals.
- **Poor Governance:** Corruption and non-provision of essential public services. Incompetent, ill-trained and poorly motivated public personnel who are mostly absent from their place of posting.
- **Lack of political representation:** Negligible representation of tribal in legislation, administration etc.
- **PESA is not implemented in letter and spirit.**

Government strategy

Government adopted **four pronged strategy** to deal with Naxalism

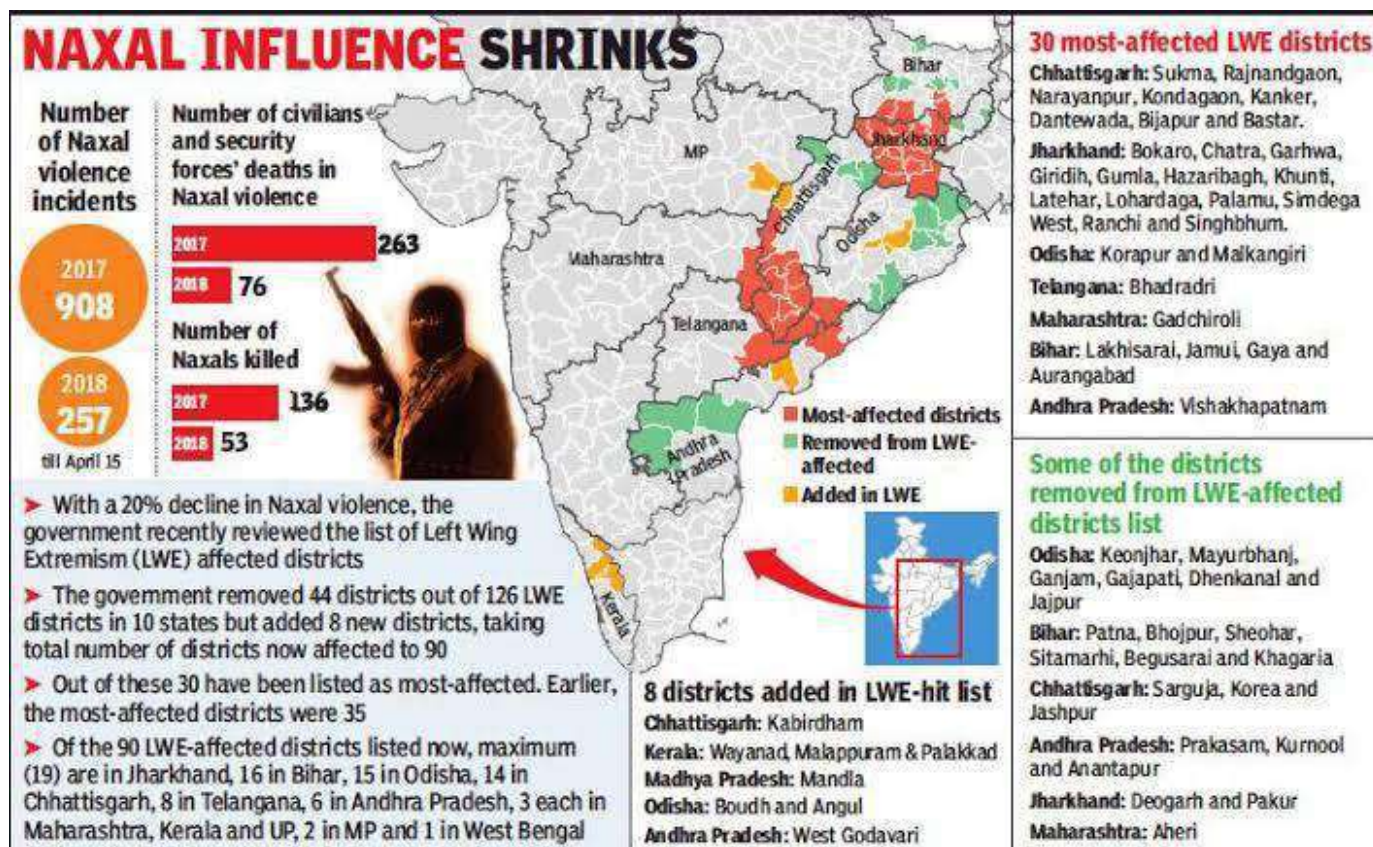
- **Security Front related intervention:** Surgical strikes based on intelligence for eliminating leaders of Naxals. COBRA Commando a specialized unit of CRPF proficient in guerrilla tactics and jungle warfare deployed.
- **Development related intervention:** Welfare schemes like VanbandhuKalyanYojana launched. Adoption of Integrated Action Plan for 82 Naxal affected tribal and backward districts
- **Rights and entitlements of forest dwellers** recognized through Forest Right Act, 2006, Panchayats (Extension to the Scheduled Areas) and Proper compensation for land acquisition.
- **Better public perception management:** Civic action programme of CAPF for holding medical camps, sanitation drives, sports meets, distribution of study material to children etc.

Way forward

- Government needs **innovative solutions for locating armed groups** in the thick forests of the Naxalism affected regions.
- **Local Police** knows the language and topography of a region, it can **fight Naxalism better than the armed forces**.
- Government needs to ensure two things; **security of the peace-loving people and the development of the Naxalism-affected regions**.
- State governments need to understand that Naxalism is their problem also and only they can tackle it effectively. They can take help from central government if required

Conclusion

- Naxalism is **declining** now they are confined to only 5 states from earlier 10 states
- We need to hasten the **social and economic changes** in an **all-inclusive growth**, may be even sacrifice growth for equitability.



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NET-ZERO GOAL**GS-III ENVIRONMENT & ECOLOGY****Context**

- US President's Climate Envoy was in India. One point of discussion was the net-zero goal for 2050, which the US wants India to be on board.

Background

- In its bid to reclaim the global climate leadership, the **US is widely expected to commit itself to a net-zero emission target for 2050.**
- Several other countries, including the **UK and France**, have already enacted laws promising to achieve a net-zero emission scenario by the middle of the century.
- The **European Union** is working on a similar Europe-wide law, while many other countries including **Canada, South Korea, Japan and Germany** have expressed their intention to commit themselves to a net-zero future.
- China has promised to go net-zero by 2060.**

India's situation

- India, the **world's third biggest emitter of greenhouse gases**, after the **US and China**, is the **only major player holding out.**
- US and other countries are **trying to influence India to come up** and pledge itself to a 2050 net-zero goal.

India's objections

- India is the **only one opposing this target** because it is likely to be the most impacted by it.
- India's position is unique. Over the next two to three decades, **India's emissions are likely to grow at the fastest pace in the world**, as it presses for higher growth to pull hundreds of millions of people out of poverty.
- No amount of afforestation or reforestation would be able to compensate for the increased emissions.**
- Most of the **carbon removal technologies right now are either unreliable or very expensive.**
- The **net-zero goal does not figure in the 2015 Paris Agreement**, the new global architecture to fight climate change.
- India has been arguing that **instead of opening up a parallel discussion on net-zero targets outside of the Paris Agreement framework, countries must focus on delivering on what they have already promised.**
- Several studies have shown that **India is the only G-20 country whose climate actions are compliant to the Paris Agreement goal of keeping global temperatures from rising beyond 2°C.**
- No major country achieved the emission-cut targets assigned to them under the Kyoto Protocol**, the climate regime preceding the Paris Agreement.
- India has been arguing that the **2050 carbon-neutrality promise might meet a similar fate**, although some countries are now binding themselves in law.
- At the same time, it has been saying that it does not rule out the possibility of achieving carbon-neutrality by 2050 or 2060. Just that, **it does not want to make an international commitment so much in advance.**

The net-zero goal

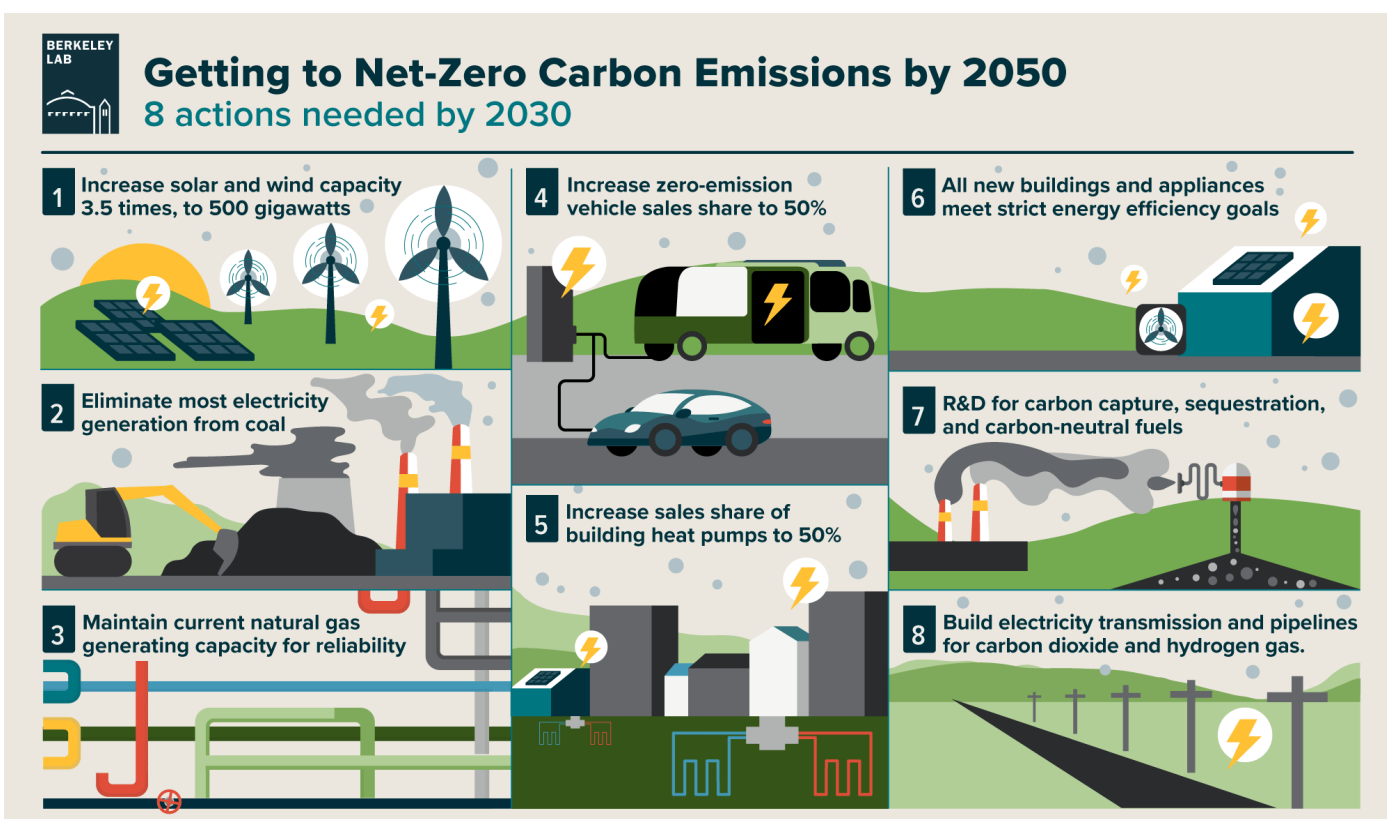
- Net-zero, which is also referred to as **carbon-neutrality**, does not mean that a country would bring down its emissions to zero.
- Rather, net-zero is a **state in which a country's emissions are compensated by absorption and removal of greenhouse gases from the atmosphere.**
- Absorption of the emissions can be increased by **creating more carbon sinks** such as forests, while **removal of gases from the atmosphere requires futuristic technologies** such as carbon capture and storage.
- This way, it is even possible for a country to have **negative emissions**, if the absorption and removal exceed the actual emissions.

- A good example is **Bhutan**, which is often described as **carbon-negative** because it absorbs more than it emits.

Why carbon neutrality by 2050 is needed?

- It is being argued that global carbon neutrality by 2050 is the **only way to achieve the Paris Agreement target of keeping the planet's temperature from rising beyond 2°C compared to pre-industrial times.**
- Current policies and actions being taken to reduce emissions would not even be able to prevent a 3–4°C rise by the turn of the century.
- **The net-zero formulation does not assign any emission reduction targets on any country.**
- Theoretically, a country can become carbon-neutral at its current level of emissions, or even by increasing its emissions, if it is able to absorb or remove more.
- From the perspective of the developed world, it is a **big relief, because now the burden is shared by everyone, and does not fall only on them.**

Some ways to achieve net-zero emission



Conclusion

- All **parts of society and economic sectors** from the power sector to industry, mobility, buildings, agriculture and forestry are needed to decarbonise the global economy.
- **International cooperation** in letter and spirit is the **only way to achieve the goals envisaged under the Paris Agreement.** This is irrespective of the form in which India finally communicates in its net-zero goal.

Context

- The Ministry of Environment, Forest and Climate Change (MoEF&CC) has published the draft Environment Impact Assessment (EIA) Notification 2020, with the intention of replacing the existing EIA Notification, 2006 under the **Environment (Protection) Act, 1986.**

- The government wants to incorporate modifications made to the regulations through amendments in the interim period.
- An EIA makes a scientific estimate of the likely impacts of a project, such as a mine, irrigation dam, industrial unit or waste treatment plant.
- There is also a provision for public consultation in the rules, including a public hearing at which the local community and interested persons can give opinions and raise objections, based on the draft EIA report prepared by experts for the project.

How does the draft EIA Notification differ from the one now in force?

- Among the major departures from existing regulations is the **removal of several activities from the purview of public consultation.**
- A list of projects has been included under **Category B2**, expressly exempted from the requirement of an EIA.
- The projects under this category include offshore and onshore oil, gas and shale exploration, hydroelectric projects up to 25 MW, irrigation projects between 2,000 and 10,000 hectares of command area, small and medium mineral beneficiation units, small foundries involving furnace units, some categories of re-rolling mills, small and medium cement plants, small clinker grinding units, acids other than phosphoric or ammonia, sulphuric acid, micro, small and medium enterprises (MSMEs) in dye and dye intermediates, bulk drugs, synthetic rubbers, medium-sized paint units, all inland waterway projects, expansion or widening of highways between 25 km and 100 km with defined parameters, aerial ropeways in ecologically sensitive areas, and specified building construction and area development projects.
- The projects in this list are, under existing norms, identified on the basis of screening by Expert Appraisal Committees, rather than being exempted through listing in the Schedule.
- Also, **coal and non-coal mineral prospecting and solar photovoltaic projects do not need** prior environmental clearance or permission in the new scheme.

What are the apprehensions?

- There is apprehension that **the exemption from EIA and public consultation for listed B2 category activity and expansion and modernisation projects will seriously affect the environment**, since these will be carried out without oversight.
- Combined with a new provision for post-facto environmental clearance (of projects executed without prior clearance), this would further weaken protections.
- Moreover, the **notice period for public hearing has been cut from 30 days to 20 days.**
- This will make it difficult to study the draft EIA report, more so when it is not widely available or provided in the regional language.
- Similarly, **for project modernisation and expansion, the norms in Notification 2020 are liberal**, with only those involving more than 25% increase requiring EIA, and over 50% attracting public consultation.
- Under the proposed changes, **project proponents need to submit only one annual report on compliance with conditions**, compared to the existing two.
- The move is seen as **retrograde**, because **the CAG found in 2016 that the deficiency in semi-annual compliance reporting was between 43% and 78%, while failure to comply with conditions ranged from 5% to 57%.**
- Non-compliance was encountered particularly in river valley and hydroelectric power projects and thermal power projects.

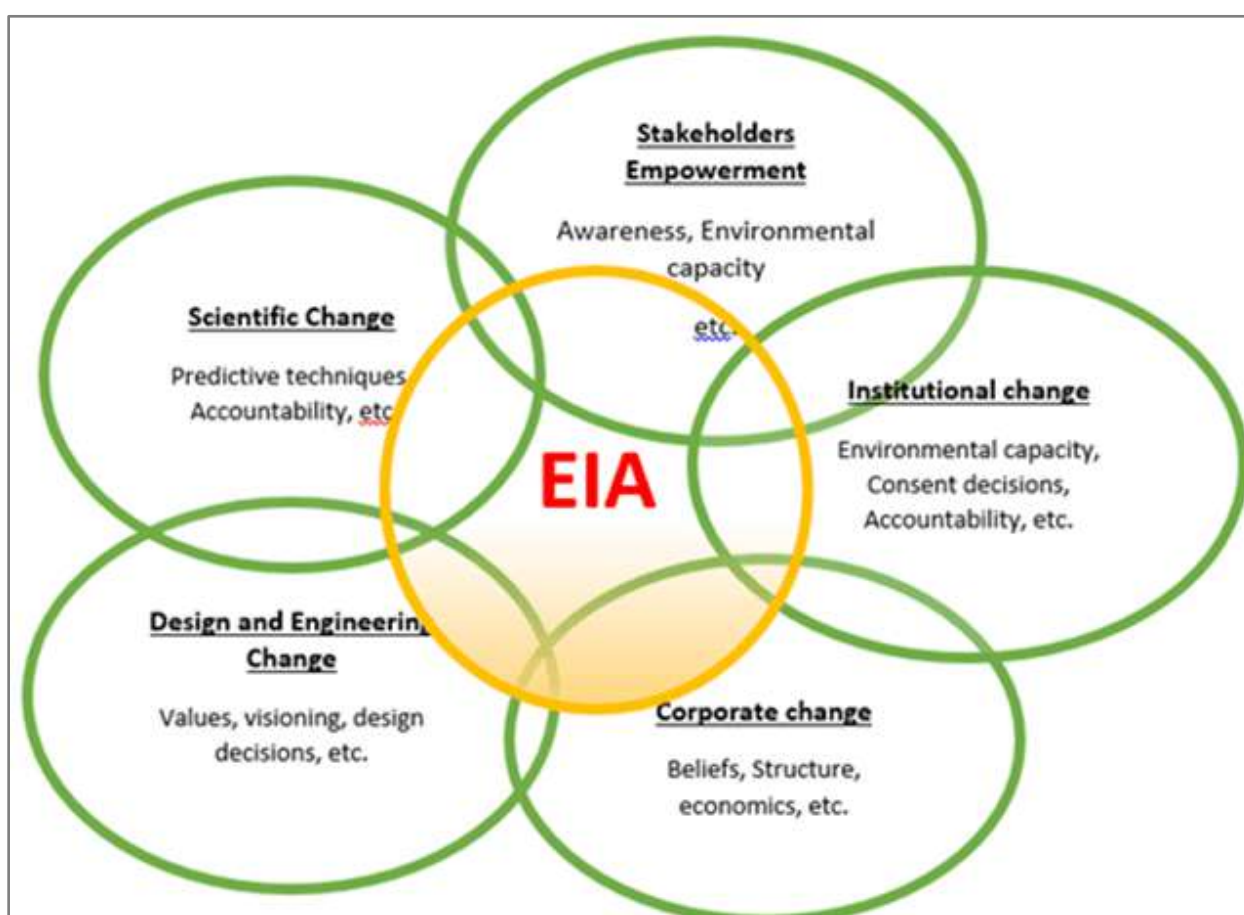
How would the new rules enable post-facto approval of violations?

- The EIA Notification 2020 **excludes reporting by the public of violations and non-compliance.**
- Instead, the government will take cognisance of reports only from the violator-promoter, government authority, Appraisal Committee or Regulatory Authority.

- Such projects can then be approved with conditions, including remediation of ecological damage, which, again, will be assessed and reported by the violator (and not an unconnected agency), although Central Pollution Control Board guidelines must be used.

How does the draft notification compare with global norms?

- EIA rules must meet the requirements of the **precautionary principle of avoiding harm, and intergenerational equity**.
- The European Union, as an evolving example, has modified its processes in accordance with the **Aarhus Convention, 1998**, which stipulates that **environmental rights and human rights are linked, the present generation owes an obligation to future generations**, sustainable development can be achieved only through the involvement of all stakeholders, government accountability and environmental protection are connected, and interactions between the public and public authorities must take place in a democratic context.
- The rules in India, including EIA 2006, it can be argued, privileged the interests of the project proponent by whittling down public consultations, accepting flawed and faulty EIA reports resulting from external influences, and ignoring the non-renewable nature of resources.



NAGZIRA TIGER RESERVE

GS-III ENVIRONMENT & ECOLOGY

Context

- Three labourers killed in forest fire at Nagzira tiger reserve, the fire was started by unidentified miscreants from neighbouring villages.

Nagzira National Park

- It is a National park located in the **state of Maharashtra**, India.

- The DrSalim Ali Bird Sanctuary, Navegaon is home to almost 60% of the bird species found in entire Maharashtra.



What are forest fires?

- Forest fires are a **recurrent annual phenomenon** in the state, and most commonly occur in Chir Pine forests.

What causes the fire?

- Natural causes:** These are **lightning or rubbing of dry bamboos** with each other can sometimes result in fires. A spark can also be produced when dry pine needles or leaves fall on an electric pole.
- Anthropogenic causes:** Forest officials maintain that almost all forest fires can be attributed to **human factors**.
 - Accidental events:** When the grass is dry, even a small spark, such as someone dropping a burning matchstick, torchwood or a bidi/cigarette, can cause a massive fire.
 - Deliberate setting of fire for encroachment and clearing the field from stubble, dry grass or undergrowth** sometimes spreads to the adjoining forest

How much damage do the forest fires cause?

- Flora:** Forest fires can cause a lot of damage to the regeneration in the forests and their productivity.
 - Moisture-loving trees such as Oaks and Deodars may **give way to other species and exotic weeds**.
- Water resources:** Forests help maintain aquifers and continuous flow of streams and springs, and provide firewood, fodder and non-timber produce to the local communities – all these capacities may get adversely affected in case of a fire.
- Soil degradation:** Forest fires may **destroy organic matter in the soil and expose the top layer to erosion**. Soil get hardened, devoid of moisture, humus etc.
- Fauna:** It **impact the wildlife by burning eggs, killing young animals and driving the adult animals away from their safe haven**.
- Humans:** Sometimes, a forest fire may get out of control and extend to human settlements, thus posing **danger to human life and property**.

- **Pollution and climate change:** Forest fires **increase carbon dioxide levels in the atmosphere, contributing to the greenhouse effect and climate change.** In addition, ashes destroy much of the nutrients and erode the soil, causing flooding and landslides.
- **The use of chemicals in firefighting** adds an additional problem to the already dramatic consequences of forest fires.

Pros of forest fire

- **Clean the forest floor:** Remove the low growing underbrush that exists underneath the canopy. Thus, it works to clean the forest floor of debris.
- **Protection from pests and disease:** Forest fires help to kill the diseases and insects that like to prey on the trees in the biome.
- **Seed germination:** Fire plays an important role in several grassland ecosystems in the world. Fire can trigger germination in several species, by breaking the physical dormancy of their seeds.

What can be done to prevent and control forest fires?

- **Forecasting fire-prone days** using meteorological data
- Clearing camping sites of dried biomass
- Early burning of dry litter on the forest floor
- Growing strips of fire-hardy plant species within the forest and
- Creating fire lines in the forests are some of the methods to prevent fires.
 - **Fire lines** are strips in the forest kept clear of vegetation to prevent the fire from spreading.
- In 1999, the state government **notified forest fire rules** which restrict or regulate certain activities in and around forest areas such as lighting a fire, burning agricultural stubble or undergrowth (ghasnis) and stacking inflammable forest produce such as dried leaves and firewood.

GEOENGINEERING

GS-III ENVIRONMENT & ECOLOGY

What is geoengineering ?

- Climate engineering or climate intervention, commonly referred to as geoengineering, is the deliberate and large-scale intervention in the Earth's climate system.
- The most prominent subcategories of climate engineering are **solar radiation management and carbon dioxide removal.**

Why in news?

- Engineers from Purdue University in the US have created the whitest paint.
- This **'Whitest ever' paint can reflect 99 per cent of sunlight.**
- Buildings coated with this paint may be able to cool them off enough to reduce the need for air conditioning, the researchers have said.

What is the whitest paint?

- The white paint older formulation was made of **calcium carbonate, while the new one is made up of barium sulphate,** which makes it more white.
- The newer paint is whiter and keeps the surface areas it is painted on cooler than the formulation before this could.
- If this new paint was used to cover a roof area of 1,000 square feet, it may be able to get a cooling power of 10 kilowatts.
- Most ovens use up about 2.3 kilowatts to run for an hour and a 3 ton 12 Seasonal Energy Efficiency Ratio (SEER) air conditioner uses up about 3 kilowatts to run for an hour.

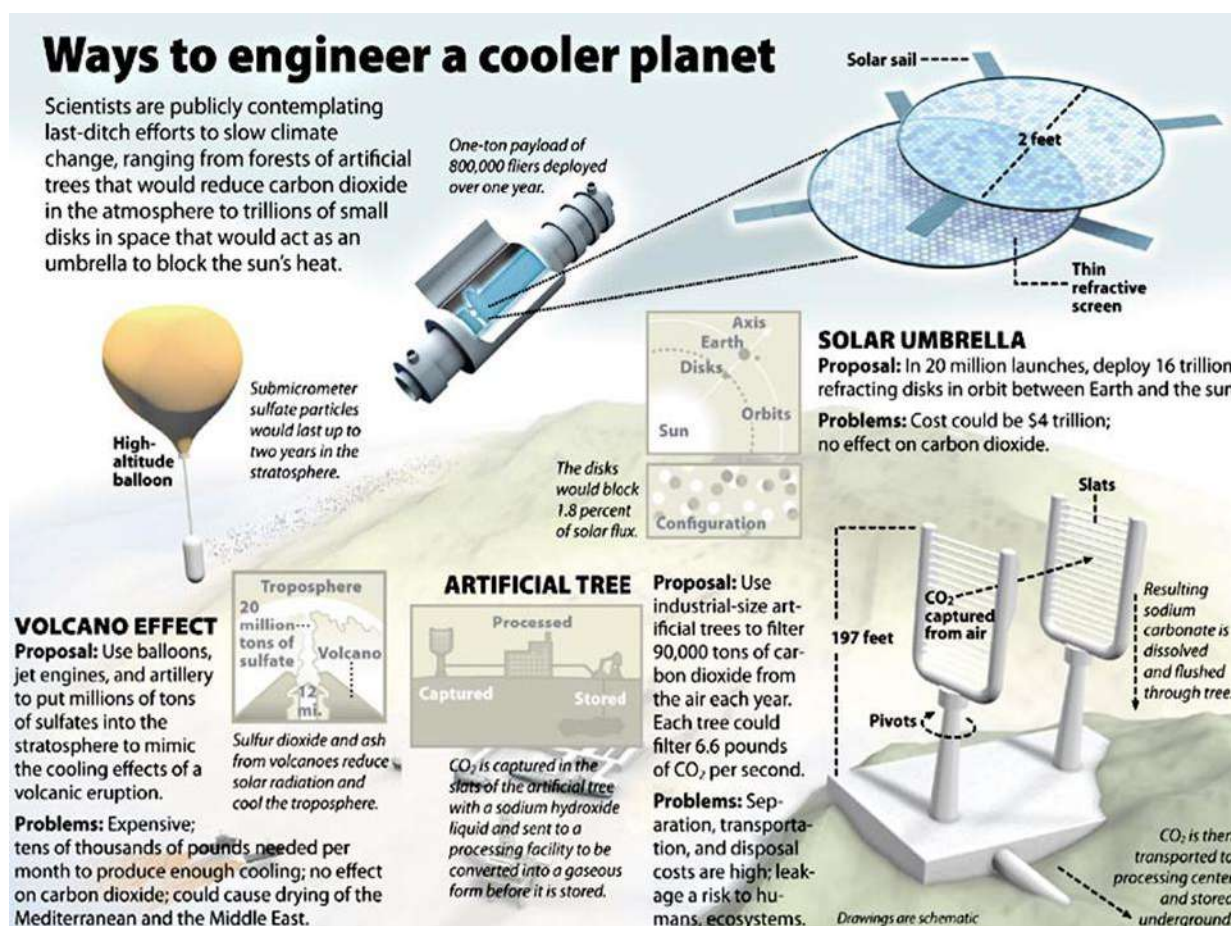
- The team has also claimed that this paint may be the **closest equivalent to the blackest black paint called "Vantablack"** that is able to absorb up to 99.9 per cent of visible light.

How this works?

- Whenever an object is seen by the eye, it is either because of sunlight or the artificial light in the room.
- This light is made up of seven different colours (Violet, Indigo, Blue, Green, Yellow, Orange and Red or VIBGYOR).
- Specifically, light is made up of wavelengths of different colours.
- The colour of any object or thing is **determined by the wavelength the molecules are not able to absorb**. Whichever wavelength of colour is not absorbed by an object, will be the colour that the eye sees.

What determines which wavelength of light will be reflected and absorbed?

- This is dependent on **how electrons are arranged in an atom** (the building block of life, an atom is made up of **electrons, protons and neutrons**).
- In contrast, if an object is black, it is because it has absorbed all the wavelengths and therefore no light is reflected from them.
- This is the reason that darker objects, as a result absorbing all wavelengths **tend to heat up faster** (during absorption the light energy is converted into heat energy).



So, what makes the paint so white?

- There are two features; one is the **paint's high concentration of a chemical compound called barium sulfate**, which is also used to make **photo paper and cosmetics white**.
- The second feature is **different sized particles of this chemical compound**, which means **different sizes scatter different amounts of light**.
- This paint can keep surfaces **19 degrees Fahrenheit cooler than their ambient surroundings at night**.
- It can also cool surfaces 8 degrees Fahrenheit below their surroundings under strong sunlight during noon hours.

THE ETHICS OF GLOBAL HEALTH POLICY

GS-IV ETHICS

Context

- From December, 2020, various countries started vaccinating their populations against COVID-19.
- As of March 24, 2021, 468 million doses have been administered in 135 countries.
- However, these doses are concentrated in high-income countries, which have **purchased 54% of secured doses**.
- Ironically, these countries account for **only 19% of the global population**.

Overview of Ethical issues in overall Global Health Policies

Discrepancies in valuation of life

- Historically, **ethical principles in health policy** have often been disregarded when it comes to vulnerable groups.
- The distribution of life-saving drugs to poor countries is considered unsustainable and also the recipients are deemed unfit and unworthy.

For example

The inadequacy of treatment for some non-communicable diseases (NCDs), such as cancer. Access to treatment is often overshadowed by the push for a **prevention-only approach to diseases** in low-income countries. This tendency continues despite the growing evidence of the burden of NCDs in low-income countries. The **Lancet NCDs and Injuries Poverty Commission** showed that more than a third of the disease burden in the poorest billion is due to NCDs.

- **WHO recommends** that countries should **increase their expenditure on primary health care by 1% of GDP** increase to achieve greater health outcomes.
- However, this **blanket, percentage-wise recommendation results in vast differences in expenditure in absolute terms** when we compare low-income and high-income countries.
- This **bypasses global solidarity** and suggests that low-income countries should spend substantially less on saving the lives of vulnerable groups.
- This indicates that the **value of one's life is linked to their country's income**.
- Consequently, this **suggests that the lives of those in low-income countries are less worthy** than the lives of those in high-income countries.
- The valuation of life solely based on where an individual lives contributes to unethical guidelines and health policies that **negate an individual's human right to health**.

Unethical pricing

- Research and development by pharmaceutical firms is substantially supported by government subsidies, yet the price cited for most medical products is multiple times the production cost.
- Subsidies given to big pharmaceutical companies comprise of taxes paid by citizens including vulnerable groups.

AstraZeneca is charging differential prices for its Covid-19 vaccines sent to different countries, with some poorer countries paying higher rates. The European Union pays \$3.50 per dose, while Bangladesh pays \$4, and South Africa as much as \$5.25 (Politico, 2021). The range of reported prices of vaccines is vast: from \$2.19 to as much as \$44 per dose- (UNICEF)

- Thus, exorbitant pricing of drugs and vaccines is unethical and denies vulnerable groups their right to health.
- The fact that most pharmaceutical firms are more profitable than most large companies in other industries further emphasizes upon unethical practices.
 - ✓ **CVS Health:** World's 13th Largest Company in terms of Revenue (Fortune 2020)
 - ✓ **United Health Group:** World's 15th Largest Company in terms of Revenue (Fortune 2020)

Exploitation of vulnerable groups in clinical trials

- Often, marginalized populations have historically been used in clinical trials.

- This use of vulnerable groups is so-called as **guinea pigs for the benefit of the rich** – A prime example of how vulnerable groups are considered dispensable.
- **Example**
 - ✓ Tuskegee Study of Untreated Syphilis in the Negro Male
 - ✓ With the COVID-19 vaccine, French doctors suggested testing the vaccine first in African populations.

Anti-scientific, anti-vaccine discourse

- Political discourse and the propagation of anti-scientific information derail the vaccination campaign globally.
- The Covid-19 vaccine development process for example has been linked to election cycles in many countries such as the USA.
- This link not only politicizes a medical product, but also reduces the trust that individuals have in the vaccine.
- Moreover, anti-vaccine groups have been spreading inaccurate information about the vaccine development process and its potential side-effects.

Vaccine Hesitancy: A result of exploitation and miscommunication

- Vulnerable groups have distrust and hesitancy towards potentially life-saving medical interventions. This distrust is a result of their exploitation across the world.
- This hesitancy is evident when considering the COVID-19 vaccine.
- A survey done by the Africa Centres for Disease Control and Prevention, in partnership with the London School of Hygiene & Tropical Medicine (London, UK), in 15 African countries shows that, on average, 21% of the population is not willing to take the vaccine.
- The distrust is because they see big pharmaceutical companies, researchers, policy makers, and the judiciary system as **unapologetic accomplices to various human rights violations and to the perpetuation of structural violence**. **Example:** On black by Whites; on LDCs and developing countries by developed ones etc.

COVID 19 and “Vaccine Apartheid”

Production and Patent Law

- Insufficient production is an important reason for the poor and unequal distribution of Covid-19 vaccines.
- But this scarcity is completely unnecessary and could be easily and rapidly remedied.
- The major factor limiting supply is **the persistence of patent rights under WTO** that give few pharmaceutical companies a monopoly on production.
- In the name of **Intellectual Property Rights (IPR)** -- developers and manufacturers of a vaccine have a right to monopolize and earn profit from their discovery.

Patents are for providing a necessary financial reward for invention/innovation, without which technological change would either not occur or be more limited. Big pharma (which has been the major lobby pushing for inclusion of intellectual property rights in the World Trade Organisation) argues that developing new drugs requires such incentives because the costs are very high.

- This has divided the world into new haves and have-nots.
- The rich West is heading smoothly towards vaccinating all citizens while the rest are finding it difficult to source vaccines. Clearly, a case of Vaccine Apartheid.

Waiver of patent rights

Demand by developing Countries

- Countries like South Africa and India have called for the World Trade Organization (WTO) to suspend intellectual property (IP) rights related to COVID-19.
- IP rights such as **patents are obstructing affordable COVID-19 medical products**.
- Also, for Covid-19 vaccines, many **big pharma companies received massive subsidies from governments**. This has already covered their research and development costs.

- A temporary ban would allow multiple actors to start production, instead of having manufacturing concentrated in the hands of a small number of patent holders.
- Otherwise, rich countries will benefit from new technologies as they come onto the market, while poor nations continue to be devastated by the pandemic.

Opposition

- The pharmaceutical industry and many high-income countries (HICs) staunchly oppose the move. They say **waiver of patent law will stifle present innovation.**
- There are big pharmaceutical companies and stakeholders who have invested in Covid-19 vaccine development.
- They argue that **vaccine technology is complex and all manufacturers may not be able to handle it.**
- They claim that such a waiver will hamper future innovation as well.
 - ✓ US had blocked export of key ingredients required for Covid-19 vaccine manufacturing in India.

Outcome

- The demand for waiver of vaccine-related intellectual property rights did not receive much support from the powerful WTO members. However, more than 100 countries have come out in support of the proposal.
- The US, the UK, Russia, China, Israel, and the European countries stockpiled vaccines to meet the needs of their population.
- In the case of the US, it stored more doses than what was required to vaccinate its entire population. **This sort of “vaccine nationalism” is morally reprehensible.**

WTO flexibility

- The **2001 Doha Declaration on TRIPS and Public Health** explicitly mentions public health emergencies as adequate cause to issue **compulsory licenses.**
- A compulsory license is **an authorisation granted by a government to a third party to produce a patented product or process, without the express consent of the patentee.**
- It allows a government to override the patentee's exclusive right to keep others from using its patented inventions.
- The idea is to prevent monopolistic behavior, like preventing others from producing and charging excessively high prices.
- Conditions for compulsory licensing are obviously met in this pandemic, which is clearly a public health emergency.

Adjoining issue

- The difficulty however with issuing compulsory licenses in developing countries is that the **transfer of technology by the inventor to other licensed producers is not compulsory.**
- For pharmaceuticals, if the chemical composition of the product is known, the product can be reverse engineered and produced by other companies.
- This is possible when the precise technology for producing the vaccine is known.
- Thus, compulsory licensing works **only when patent holders are willing to make available the technology to various licensed producers.**
- The need of the hour is to **suspend intellectual property (IP) patents on vaccine technology.**

As of now, only a few Vaccine manufacturers for example: Serum Institute in case of India has been allowed by Foreign Original Vaccine Developer to produce vaccines (as per tie-ups). This has led to shortage despite of the fact that India is the largest Vaccine manufacturer and exporter in the world since decades. If the IPR under the WTO is waived off and technology is transferred to other licensed Vaccine Manufacturers as well they can reverse engineer the patented vaccines by themselves and address the shortages.

India's recent statement to TRIPS Council: "On one hand, these countries are buying up as much of the limited supply as they can, leaving no vaccines in the pie for developing and least-developed countries. On the other hand, and very strangely, these are the same countries who are arguing against the need for the IPR waiver that can help increase the global manufacturing and supply to achieve not just equitable, but also timely and affordable access to such vaccines for all countries.

Efforts made for equitable distribution

Covax Alliance

- The **Covid-19 Vaccines Global Access Facility or COVAX** led by the **World Health Organisation, the Coalition for Epidemic Preparedness Innovations (CEPI), and GAVI**, was established to prevent hoarding by rich countries and ensure access for the world's poor.
- COVAX aims to accelerate Covid-19 vaccine development, secure doses for all countries, and distribute those doses fairly, beginning with the highest-risk groups.
- By early 2021, 190 countries, representing most of the world's population, had joined the alliance including India.

Issues of Covax Alliance

- The facility still remains underfunded.
- It has not been able to purchase the vaccines required for free distribution to poor countries as much as planned.
- This is because the **COVAX facility** allows member countries to make their own separate purchases directly from Pharma companies.
- As a result, rich countries have secured bilateral deals with pharmaceutical companies outside of COVAX.

Outcome

- Rich countries are now **stockpiling vaccines** that they have grabbed but are unable to distribute.
- Firms preferred to sell in these **bilateral deals** because they could charge higher prices than offered by COVAX.
- They typically keep secret the basic elements of the deal, including the price at which the vaccines were being provided to these governments.

But what about India's Indigenous Vaccine: Covaxin?

Only after India faced huge vaccine shortages and lakhs of lives lost that The Indian Council of Medical Research (ICMR) has declared that it is willing to share the know-how to produce the indigenously-developed Covid-19 vaccine, Covaxin, with any company as the contract with co-developer Bharat Biotech is not close-ended.

While transferring the Covid-19 vaccine technology Bharat Bio will pay the ICMR, **5 per cent royalty on the net sales of Covaxin. The irony is there are talks of Royalty.** Failure of Govt. and Regulators is evident in reigning in pharmaceutical companies even when millions of lives are at stake.

The question at the cold heart of this debate is simple: What is the Future of Humanity and Morality? Should money be made out of human misery? Should the worst health tragedy in a hundred years be seen through the lens of profits and dividends? The answer too should be simple: A resounding no.

Collective Moral Responsibility

- An **"every-country-for-itself"** approach is irrational and even counterproductive. Yet that is exactly what has happened.
- If the virus is to be permanently defeated, around 70 per cent of the world's population needs to be vaccinated, irrespective of whether they live in rich or poor countries.
- If the virus was rampant in the US yesterday as in India today, it could well be so in Africa tomorrow.
- The more time it has to evolve, the more the danger of vaccine resistant variants.
- In this global health crisis, **pockets of vaccinated safety are an illusion.**
- **Nobody can be safe until everybody is safe.** This is the harsh and bitter reality.
- Yet vaccine nationalism is on shameless display across the yawning north-south divide.

- A global move for suspension and/or modification of intellectual property rights for matters relating to essential public health concerns is essential.
- If vaccination drive is slow anywhere in the world, Covid-19 will continue to present a threat to life and livelihood everywhere on the globe.
- **Vaccine Nationalism, therefore, is incredibly shortsighted.** The alternative is a **Global Vaccine Programme**.

Way Ahead: The Role of Regulating Agencies

- Worldwide, various players have greatly undermined and discriminated against vulnerable groups, refusing their right to health.
- This pandemic is **an occasion to correct historical wrongs** and set forth a path in global health **that solely relies on the ethical production and distribution of life-saving care and treatment**.
- Institutions such as **WHO should play their part** in ensuring that the history of exploitation in the testing and distribution of drugs and vaccines does not repeat itself.
- The **WTO needs a major reform** as well. It should support the World Health Organization, the World Intellectual Property Organization, and multi-stakeholder initiatives for the vaccines to reach all.
- **Strict laws should be enforced so that Drug companies share their vaccine know-how with the rest of the world.**
- We need to **examine our moral principles when it comes to vulnerable groups**.
- **There is a need to keep pharmaceutical companies, normative agencies, and political leaders in check** and continuously advocate for initiatives that first and foremost promote ethical and equitable solutions.
- It is only by doing so that **we can remove the unethical barriers that stand between vulnerable groups and life-saving medical and public health interventions**.

GAVI

- GAVI, the Vaccine Alliance is a **public-private global health partnership** with the goal of increasing access to immunization in poor countries. It was **created in 2000**.
- GAVI brings together developing country and donor governments, the World Health Organization, UNICEF, the World Bank, the vaccine industry in both industrialized and developing countries, research and technical agencies, civil society, the Bill & Melinda Gates Foundation and other private philanthropists.
- GAVI has **observer status at the World Health Assembly**. Last year, **India's Union Minister of Health and Family Welfare was nominated by the Global Alliance for Vaccines and Immunisation (GAVI) as a member on GAVI board**. The minister will be representing the **South East Area Regional Office (SEARO)/Western Pacific Regional Office (WPRO) constituency** on the GAVI Board.
- **Gavi Board**
- With membership drawn from a range of partner organisations, as well as experts from the private sector, the Board provides a forum for balanced strategic decision making, innovation and partner collaboration.
- It normally **meets twice a year**
- **UNICEF, WHO, the World Bank and the Bill & Melinda Gates Foundation hold permanent seats**; representatives of other GAVI partners serve on time-limited basis.

Coalition for Epidemic Preparedness Innovations (CEPI)

- The **Coalition for Epidemic Preparedness Innovations (CEPI)** is a foundation that takes donations from public, private, philanthropic, and civil society organizations, to finance independent research projects to develop vaccines against emerging infectious diseases (EID).
 - ✓ An emerging infectious disease (EID) is an infectious disease whose incidence has increased recently (in the past 20 years), and could increase in the near future.[2] Such diseases do not respect national boundaries.
- It is focused on the WHO's "**blueprint priority diseases**". These diseases include the Middle East respiratory syndrome-related coronavirus (MERS-CoV), the SARS coronavirus 2 the Nipah virus, the Lassa fever virus, and the Rift Valley fever virus, as well as the Chikungunya virus etc.
- CEPI was launched in 2017 at the **World Economic Forum (WEF) in Davos, Switzerland**. CEPI is **headquartered in Oslo, Norway**.
- CEPI was founded by the Government of Norway, the Bill & Melinda Gates Foundation, the Wellcome Trust, the World Economic Forum, and **India's Department of Biotechnology**.

TRIPS

- The **Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)** is an international legal agreement between all the member nations of the World Trade Organization (WTO). It is a multilateral agreement on intellectual property (IP).
- TRIPS was negotiated at the end of the **Uruguay Round of the General Agreement on Tariffs and Trade (GATT) between 1989 and 1990**. It is administered by the WTO. **India is a member of the World Trade Organisation and committed to TRIPS Agreement**. Trademarks, Copyright (for a minimum period of 50 years after the death of the author), **Geographical Indication Tags come under TRIPS**.
- The **Doha Declaration on the TRIPS Agreement and Public Health** was adopted by the WTO Ministerial Conference of 2001 in Doha. It reaffirmed **flexibility of TRIPS member states in circumventing patent rights for better access to essential medicines** in which it is mentioned that patents do not run against the interests of public health and access in times of a pandemic.
- Compulsory licensing is when a government allows someone else to produce the patented product or process without the consent of the patent owner.

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SHORT NEWS ARTICLES

CULTURE & HISTORY

Plain of Jars

Context

- Archaeologists recently found that the jars in the “Plain of Jars” were used as burial sites.

About

- The Plain of Jars is a **megalithic archaeological landscape in Laos**.
- It consists of thousands of stone jars scattered around the Xiangkhoang Plateau.
- The jars are arranged in clusters ranging in number from one to several hundred. The jars could be 3,000 years old.
- Plain of Jars became the **UNESCO World Heritage Site** in 2019.



Xiangkhoang Plateau

- The Xiangkhoang Plateau is at the northern end of the Annamese Cordillera, the principal mountain range of Indochina.

Laos

- It is the only landlocked country in Southeast Asia.
- Laos is bordered by Myanmar and China to the northwest, Vietnam to the east, Cambodia to the southeast and Thailand to the west and southwest.



Benin Bronzes

Context

- Germany recently announced that it is to return the artefacts called the “Benin Bronzes” to Nigeria.

About

- The Benin Bronzes are a group of more than a thousand **metal plaques and sculptures** that decorated the royal palace of the **Kingdom of Benin in what is now Nigeria**.
- Most of the plaques and other objects were looted by British forces during the Benin Expedition of 1897.
- Though they are named as bronzes, they are mostly made of brass. Some of them are made of ivory, wood or ceramic.
- Benin Bronzes were made using lost-wax casting process.



Nigeria

- Nigeria is a country in **West Africa**.
- It borders Niger in the north, Chad in the northeast, Cameroon in the east, and Benin in the west.
- Its **southern coast is on the Gulf of Guinea in the Atlantic Ocean**.

Benin

- Benin is a country in West Africa.
- It is bordered by Togo to the west, Nigeria to the east, Burkina Faso to the north-west, and Niger to the north-east.
- The majority of its population lives on the small southern coastline of the Bight of Benin, part of the Gulf of Guinea in the northernmost tropical portion of the Atlantic Ocean.



Little Guru App

Context

- Recently, India launched first-ever app that teaches Sanskrit language.

About

- The app has been developed by the **Indian Council for Cultural Relations (ICCR)** and aims to make learning Sanskrit easy and entertaining by gamifying it.

Sanskrit

- Sanskrit is a classical language of South Asia belonging to the Indo-Aryan branch of the Indo-European languages.
- The oldest form of Sanskrit is Vedic Sanskrit that dates back to the 2nd millennium BCE.
- Classical Sanskrit has 48 phonemes (Vedic Sanskrit has 49). Phonemes are sounds that make a difference in word meaning.
- The oldest surviving Sanskrit grammar is **Pāṇini's prescriptive Eight-Chapter Grammar** of Classical Sanskrit, dating back to about 500 BC. His rules helped systematize Sanskrit grammar.
- Sanskrit is usually **written in the Devanāgarī script**, a descendant of the Brāhmī script.
- It is one of the 22 official languages of India.
- Sanskrit is the **official language of Uttarakhand**.
- "Sudharma" is a Sanskrit Newspaper** that has been in publication since 1970.
- People in **Mattur village in Karnataka** only speak Sanskrit.

Hoysala Period

Context

- An inscription of the Hoysala period and pedestals were found close to Kellengere near Arsikere, Karnataka.

Hoysala Kindgom	Details
Area of Rule	Karnataka, parts of Tamil Nadu (Kaveri delta), Andhra Pradesh and Telangana
Origin	Malenadu, an elevated region in the Western Ghats.
Period	10th and the 14th centuries
Capital	Initially Belur but was later moved to (Dvarasamudra) Halebidu
Common Languages	Kannada, Sanskrit
Religion	Hinduism, Jainism
Preceded by	Western Chalukya Empire
Succeeded by	Vijayanagara Empire
Founder	Nripakama II/Sala
Most powerful Ruler	Vira Ballala II
Title Talakadugonda	Vishnuvardhana won Gangavadi from the Cholas and earned the title Talakadugonda
Hoysala Architecture	Display sculptural exuberance- Chennakeshava Temple. Centres- Belur, Somnathpur
Economy	Agrarian
Last Ruler	Veera Ballala III (Battle of Kannanur) Madurai Sultanate victory under Ghiyas-ud-din

Jagjivan Ram

Context

- Recently, PM Modi paid tributes to Babu Jagjivan Ram on his 114th birth anniversary.

Who was Jagjivan Ram?

- Popularly known as Babuji he was a national leader, a freedom fighter, a crusader of social justice, a champion of depressed classes and served as the Deputy PM of India.

Contribution

- Instrumental in the foundation of the **All India Depressed Classes League**- an organisation dedicated to attaining equality for untouchables.

- **Champion of social equality and equal rights** for the Depressed Classes.
- Elected to Bihar Legislative Assembly in 1937, after which he organized **the rural labour movement**.
- Appeared before the **Hammond Commission** at Ranchi and demanded, for the first time, voting rights for the Dalits.
- Inspired by Gandhiji, he entrenched himself deeply into **the Civil Disobedience Movement and Satyagraha**.
- Actively **participated in the Quit India Movement** and courted arrest.
- **Appointed as the Parliamentary Secretary** in the Ministry of Education and Development in 1937.
- Appointed as **Minister of Labour in Interim Government** in 1946.
- **Defence Minister of India** during the Indo-Pak war of 1971.
- Former **Deputy Prime Minister** of Independent India (1977-79).
- In a nutshell, Babuji not only contributed to the Freedom Struggle but also to the development of independent India, especially in agriculture, labour welfare, railways and defence.
- He worked tirelessly for the poor and down-trodden.

Lost Golden City

Context

- Egypt, recently touted the discovery of King Tutankhamun's tomb in 1922 almost 100 years ago.

About

- "Lost golden city" was from the era of **18th-dynasty king Amenhotep III**, who ruled ancient Egypt from **1391 to 1353 B.C.**
- The discovered city is located on the **west bank of the Nile River**.
- The **legend of Tutankhamun**, whose tomb was discovered almost intact in the Valley of the Kings in 1922 is famous on account of the vast treasure discovered at the location.
- **Findings:** City walls and even rooms filled with utensils used in daily life. They have found clay caps of wine vessels, rings, scarabs, colored pottery, and spinning and weaving tools
- Some mud bricks discovered bear the seal of **King Amenhotep III**.
- **Tutankhamun's grandfather King Amenhotep III**, is considered to be one of Egypt's most powerful pharaohs.



Egypt

- It is a **transcontinental country** spanning the northeast corner of Africa and southwest corner of Asia by a land **bridge formed by the Sinai Peninsula**.
- Egypt is a Mediterranean country bordered by **Libya to the west, the Sudan to the south, and the Gaza Strip and Israel to the east**.
- The longest river in Africa - Nile flows through 11 countries including Egypt.
- Egypt includes parts of the Sahara desert and of the Libyan Desert.



Khajuraho Temple in News

- Ministry of Tourism had recently organised webinar on "Khajuraho – Temples of Architectural Splendour" under
- Dekho Apna Desh.

Read about Khajuraho Temples in detail in early edition: <https://www.iasgyan.in/ias-gazette-magazine/the-ias-gazette-march-2021>

Lingaraj Temple in News

- Recently, the Odisha Government has restricted public entry into the Lingaraj Temple after four sevayats (priests) tested positive for the novel coronavirus.

Read about Lingaraj and Konark Temples in detail in previous edition: <https://www.iasgyan.in/ias-gazette-magazine/the-ias-gazette-april-2021>

102 years of the Jallianwala Bagh Massacre – Read about it in detail in Spectrum Modern History Book.

Konyak Community

Context

- Konyaks in Nagaland has declared that it will not pay “taxes” to the myriad extremist groups in the state unless they unite for the greater cause of the Nagas.

Konyaks

- The Konyaks are one of the **major Naga ethnic groups**. They are known in Arunachal Pradesh as the **Wanchos**.
- In Nagaland, they inhabit the Mon District – also known as '**The Land of The Anghs**'.
- The **Anghs/Wangs are their traditional chiefs** whom they hold in high esteem.
- Facial tattoos were earned for taking an enemy's head.
- The number of hunted heads indicated the power of a warrior.
- The **headhunting expeditions** were often driven by certain beliefs, such as code of honour and principles of loyalty and sacrifice.
- Other unique traditional practices that set the Konyaks apart are: gunsmithing, iron-smelting, brass-works, and gunpowder-making. They are also adept in making '**janglaü**' (**machetes**) and **wooden sculptures**.
- Aoleng, a festival celebrated to welcome the spring and also to invoke the Almighty's (Kahwang) blessing upon the land before seed-sowing, is the biggest festival of the Konyaks.
- '**Lao Ong Mo**', is another traditional harvest festival celebrated in the months of August/September.

Attingal Revolt

Context

- Recently, 300th anniversary of the Attingal Revolt of 1721, was observed. It is also referred as Anjengo Revolt.

About

- Attingal Outbreak refers to the **massacre of 140 East India Company soldiers** by native Indians and the following siege of Fort Anjengo.
- The Attingal Outbreak is often regarded as the **first organized revolt against British authority in Malabar, Cochin and Travancore**.
- The main reasons behind the resentment were **large scale corruption and the manipulation of black pepper prices by the Company**.

GEOGRAPHY

Mettur-Sarabanga Lift Irrigation Project

Context

- The southern bench of the National Green Tribunal (NGT) has dismissed the petition challenging the Tamil Nadu government's ambitious Mettur-Sarabanga lift irrigation project.

Sarabanga

- Sarabanga is a river flowing in Tamil Nadu.
- The **origin** of the river is traditionally placed at **Yercaud foothills** in Tamil Nadu.
- The river joins the Kaveri River near Annamar Kovil before flowing into the Bay of Bengal.
- Dams on the river are located at Peramachipalayam.

Mettur

- Mettur is an industrial and tourism town located in the Salem district in Tamil Nadu.
- It is best known for the **Mettur Dam and it is the largest dam in south Indian**.
- Mettur is known for its huge dam, power generation, chemical manufacturing, and aluminium production.

- Mettur is also called the "**Aluminium city of Tamil Nadu**".
- Most of the water requirements for irrigation in Tamil Nadu is provided by the Mettur Dam.
- Usually the dam opens in June every year for irrigation in the Kaveri Delta.
- Mettur is also one of the primary sources of electricity for Tamil Nadu.

Mettur Dam

- Mettur Dam, which forms **Stanley Reservoir**, is constructed across the Kaveri River in Tamil Nadu.
- Dam receives the water from both Kabini Dam and Krishna Raja Sagara Dam located in Karnataka.
- There is a park at the base of the dam called **Ellis Park** maintained by Tamil Nadu.

La Soufrière Volcano

Context

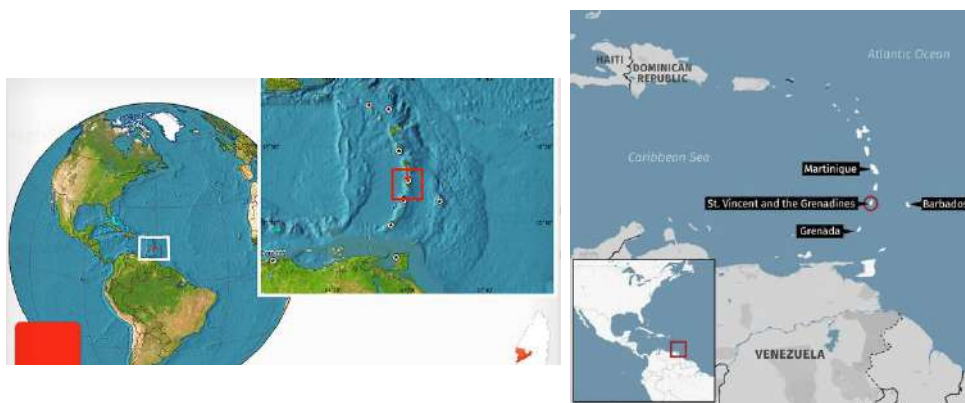
- Recently, Soufrière Saint Vincent Volcano experienced an "explosive eruption."

About

- Soufrière Saint Vincent is **an active stratovolcano** with a Crater lake on the Caribbean island of Saint Vincent.
- It is the **highest peak in Saint Vincent**, and has had five recorded explosive eruptions since 1718.

Saint Vincent and the Grenadines

- Saint Vincent and the Grenadines often simply referred to as Saint Vincent, is an island country in the Caribbean.
- It is located in the southeast **Windward Islands of the Lesser Antilles**, which lie in the West Indies at the southern end of the **eastern border of the Caribbean Sea where the latter meets the Atlantic Ocean**.



SHIELD VOLCANO	CINDER CONE	COMPOSITE VOLCANO/ STRATOVOLCANO	LAVA DOME
			
<ul style="list-style-type: none"> • Eruption Style: gentle, lots of magma, lava fountains and bombs. • Magma: hot, low viscosity (runny), fast moving. • Gas: low levels, can escape from magma. • Shape: wide and low with gently sloping sides (from layers of lava flows cooling) • Example: Mauna Loa, Hawaii. 	<ul style="list-style-type: none"> • Eruption Style: mildly explosive, erupt lava from a breach in side or base of volcano, gas-filled lava cools to become cinders. • Magma: low viscosity, hot, soft. • Gas: expands and forms bubbles in lava, high levels. • Shape: steep sides, small crater, surrounded by debris of small red or black basalt rocks with little holes (rock solidifies around bubbles) • Example: Parícutin, Mexico. 	<ul style="list-style-type: none"> • Eruption Style: explosive, violent, lava flows, lahar, pyroclastic flows, cinders and ash clouds. • Magma: slightly cooler, thick and sticky, very viscous, foams and explodes violently. • Gas: high levels, pressure from gas bubbles trying to escape. • Shape: regular shape, steep sided cones, rough landscape, layers of lava, rock and ash make it tall. • Example: Mt Fuji, Japan. 	<ul style="list-style-type: none"> • Eruption Style: slow, can be violent, lava does not flow far. • Magma: highly viscous. • Gas: low levels. • Shape: hardened, thick layers of rock. • Example: Mt St Helens, USA

Red Sea

Context

- An Iranian cargo ship and anchored for years in the Red Sea off Yemen has been attacked.

About

- Red Sea is a seawater inlet of the Indian Ocean, lying between Africa and Asia.
- Its connection to the ocean is in the south, through the **Bab el Mandeb strait and the Gulf of Aden**.
- To its north lie the Sinai Peninsula, the Gulf of Aqaba, and the Gulf of Suez (leading to the Suez Canal).
- It is underlain by the Red Sea Rift, which is **part of the Great Rift Valley**.
- The Red Sea lies in a fault depression that separates two great blocks of Earth's crust—Arabia and North Africa.
- It is the world's northernmost tropical sea, and has been **designated a Global 200 eco-region**.
- Primary Inflows:** Barka River, Haddas River, Anseba River, Wadi Gasus
- Primary outflows:** Bab el Mandeb
- Basin Countries:** Djibouti, Egypt, Eritrea, Saudi Arabia (Largest EEZ), Sudan, and Yemen.
- Normally, the Red Sea is an intense blue-green; occasionally, however, it is populated by extensive blooms of the algae *Trichodesmium erythraeum*, which, upon dying off, turn the sea a reddish brown colour.



Chilka Lake

Context

- The Chilika lake in Odisha, was once part of the Bay of Bengal - National Institute of Oceanography (NIO) study.

About

- Chilika Lake is a **brackish water lagoon**, spread over the Puri, Khurda and Ganjam districts of Odisha.
- It is **at the mouth of the Daya River**, flowing into the Bay of Bengal.
- It is the **largest coastal lagoon in India** and the **second largest brackish water lagoon in the world** after The New Caledonian barrier reef.
- It has been listed as a **tentative UNESCO World Heritage site**.
- It is the **largest wintering ground for migratory birds on the Indian sub-continent**.
- Birds from as far as the **Caspian Sea, Lake Baikal, Aral Sea** and other remote parts of Russia, Kirghiz steppes of Kazakhstan, Central and southeast Asia, Ladakh and Himalayas come here.
- These birds travel great distances; some of them possibly **travel upto 12,000 km**, to reach Chilika Lake.
- Nalabana Island in the lagoon was declared a **bird sanctuary in 1987**.
- Kalijai Temple is located in the Chilika Lake.
- In 1981, Chilika Lake was designated the **first Indian wetland of international importance under the Ramsar Convention**.
- Around 152 rare and **endangered Irrawaddy dolphins** reside off **Satpada Island** in Chilka Lake.

Umngot

Context

- Stiff resistance from villages in Meghalaya has cast a cloud on a 210 MW hydroelectric project on Umngot.

About

- Umngot is the **cleanest river in India**.
- Located in Meghalaya this **river is the natural boundary between Ri Pnar (of Jaintia Hills) with Hima Khyrim (of Khasi Hills)**.
- It is the **gateway to Bangladesh**.

- **Dawki Bridge**, is a suspension bridge over the Umngot River.

Godavari

Context

- The Godavari was released into the irrigation canals in East and West Godavari districts from the **Polavaram Irrigation Project**.

About

- The Godavari is India's fourth longest river after the Ganga.
- Its source is in Triambakeshwar, Maharashtra.
- It flows draining the states of Maharashtra (48.6%), Telangana (18.8%), Andhra Pradesh (4.5%), Chhattisgarh (10.9%) and Odisha (5.7%).
- The river ultimately empties into the Bay of Bengal.
- In terms of length, catchment area and discharge, the Godavari is the largest in peninsular India, and had been dubbed as the Dakshina Ganga.
- Left Tributaries: Banganga, Kadva, Shivana, Purna, Kadam, Pranahita, Indravati, Taliperu, Sabari, Dharna
- Right Tributaries: Nasardi, Pravara, Sindphana, Manjira, Manair, Kinnerasani
- Projects on Godavari
 - Dummugudem Barrage
 - Vishnupuri Barrage
 - Sriram Sagar Project
 - Polavaram Project
 - Kaleshwaram Lift Irrigation Project
 - Devadula Irrigation Scheme
 - Sadarmatt Anicut
 - Icchampally Project
 - Sripada Yellampalli Project

Sadabahar

Context

- Shrikishan Suman a farmer from Kota, Rajasthan, has developed an innovative mango called Sadabahar.
- The innovative attributes of the variety have been verified by the National Innovation Foundation (NIF).

About

- Sadabahar is a dwarf variety of mango that can be grown regularly for round the year.
- It is **resistant to most major diseases and common mango disorders**.
- The fruit is **sweeter in taste**, comparable to langra.
- Being a dwarf variety, it is suitable for kitchen gardening, high-density plantation, and can be grown in pots for some years too.
- The pulp has **very less fiber content** which differentiates it from other varieties.

National Innovation Foundation (NIF), is an **autonomous institution of the Department of Science & Technology**. It is India's national initiative to strengthen the grassroots technological innovations and outstanding traditional knowledge. Its mission is to help India become a creative and knowledge-based society by expanding policy and institutional space for grassroots technological innovators.

Whitsun Reef

Context

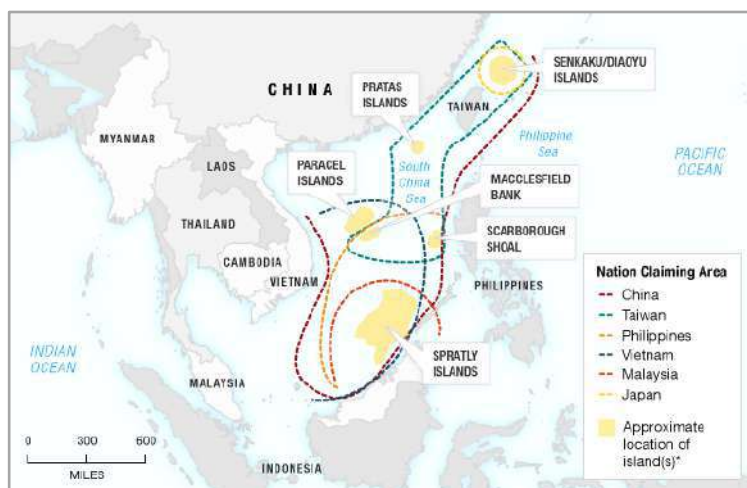
- China's aggressive expansion in the South China Sea has found a new ground called Whitsun Reef.
- 220 Chinese vessels moored though the area, which comes under the Philippines' Exclusive Economic Zones (EEZ).

About

- Whitsun Reef, is a reef at the northeast extreme limit of the Union Banks in the Spratly Islands of the South China Sea.
- It is the largest reef of the Union Banks.

South China Sea

- South China Sea is a **marginal sea of the Western Pacific Ocean**.
- It is **bounded in the**
 - north by the shores of South China,
 - west by the **Indochinese Peninsula**,
 - east by the **islands of Taiwan** and northwestern Philippines (mainly Luzon, Mindoro and Palawan), and
 - south by Borneo, eastern Sumatra and the Bangka Belitung Islands, encompassing an area of around 3,500,000 km² (1,400,000 sq mi).
- It communicates with the
 - East China Sea via the Taiwan Strait,
 - the Philippine Sea via the Luzon Strait,
 - the Sulu Sea via the straits around Palawan (e.g. the Mindoro and Balabac Strait),
 - the Strait of Malacca via the Strait of Singapore, and
 - the Java Sea via the Karimata and Bangka Strait.
- The Gulf of Thailand and the Gulf of Tonkin are also part of the South China Sea.
- The shallow waters south of the Riau Islands are also known as the Natuna Sea.
- The South China Sea is a region of tremendous economic and geostrategic importance.
- One-third of the world's maritime shipping passes through it.



Thwaites Glacier

Context

- The melting of **Antarctica's Thwaites Glacier** – also called the “**Doomsday Glacier**” – has long been a cause of concern because of its high potential of speeding up the global sea level rise happening due to climate change.

About

- Thwaites Glacier, is a vast Antarctic glacier flowing into the Pine Island Bay, part of the **Amundsen Sea**.
- It is 120 km wide at its broadest, fast-moving, and melting fast over the years.
- Because of its size, it contains enough water to raise the **world sea level by more than half a metre**.
- The amount of ice flowing out of it has nearly **doubled**



over the past 30 years.

- Today, Thwaites's melting already **contributes 4% to global sea level rise each year**.
- Along with the Pine Island Glacier, it has been described as part of the "**weak underbelly**" of the **West Antarctic Ice Sheet**, due to its apparent vulnerability to significant retreat.



Tanzania

Context

- President passed away.

About

- Country in East Africa within the African Great Lakes region.
- Borders Uganda to the north; Kenya to the northeast; Comoro Islands and the Indian Ocean to the east; Mozambique and Malawi to the south; Zambia to the southwest; and Rwanda, Burundi, and the Democratic Republic of the Congo to the west.
- Mount Kilimanjaro, Africa's highest mountain, is in northeastern Tanzania.
- Floor of Lake Tanganyika, at 1,471 metres below sea level is the lowest point in Africa.
- **Capital-** Dodoma
- Three of Africa's Great Lakes are partly within Tanzania.
- To the north and west lie **Lake Victoria**, Africa's largest lake, and Lake Tanganyika, the continent's deepest lake.
- To the southwest lies Lake Nyasa.



Valley of Fallen

Context

- The Spanish government has kickstarted the process to open up a mass grave at the 'Valley of the Fallen', where over 30,000 victims of the Spanish Civil War lay buried.

About

- The Valley of the Fallen is a Catholic basilica and a monumental memorial near Madrid, Spain.
- **Valle de los Caídos, or Valley of the Fallen**, was constructed by former dictator **Francisco Franco** following the Spanish Civil war (1936-1939) as a burial monument and memorial Church.

Sahel

Context

- Chad, the former French colony is now prime outpost of the West in fighting Islamist militants across the Sahel.

About

- The Sahel is the ecoclimatic and biogeographic realm of transition in Africa between the Sahara to the north and the Sudanian savanna to the south.
- It stretches across the south-central latitudes of Northern Africa between the Atlantic Ocean and the Red Sea.
- The Sahel part of Africa includes parts of **Senegal, Mauritania, Mali, Burkina Faso, Algeria, Niger, Cameroon, Chad, Sudan, South Sudan, Eritrea and Ethiopia.**



Marib

Context

- Yemen's Houthi rebels have made important gains in the battle for the government's last northern stronghold, advancing close to the centre of Marib city.

About

- Marib is the capital city of Yemen.
- It was the capital of the **ancient kingdom of Saba**.
- It is located approximately 120 kilometres east of Yemen's **modern capital, Sanaa**, and is in the region of the **Sarawat Mountains**.

Yemen

- Yemen is **in Western Asia**, in the southern part of the Arabian Peninsula.
- It is bordered by **Saudi Arabia to the north, the Red Sea to the west, the Gulf of Aden and Guardafui Channel to the south, and Oman to the east.**
- Yemen is a member of the **Arab League, United Nations, Non-Aligned Movement and the Organisation of Islamic Cooperation.**
- A number of Red Sea islands, including the **Hanish Islands, Kamaran, and Perim**, as well as **Socotra** in the Arabian Sea, belong to Yemen; the largest of these is Socotra.



Kowloon peninsula

Context

- Hong Kong is to grant a site on the western Kowloon peninsula, to China's national security office for its permanent base in the city.

About

- The Kowloon Peninsula forms the southern part of the main landmass in the territory of Hong Kong.
- The Kowloon Peninsula and the area of New Kowloon are collectively known as Kowloon.
- In a nutshell, Kowloon is located directly north of Hong Kong Island across



Victoria Harbour.

- It is bordered by the Lei Yue Mun strait to the east, Mei Foo Sun Chuen and Stonecutter's Island to the west, a mountain range, including Tate's Cairn and Lion Rock to the north, and Victoria Harbour to the south.

POLITY

Article 244 A : creation of an 'autonomous state' within Assam

Context:

- Congress leader Rahul Gandhi promised to implement Article 244 (A) of the Constitution to safeguard the interests of the people in Assam's tribal-majority districts.

About Article 244 A

- Article 244(A) allows for **creation of an 'autonomous state' within Assam** in certain tribal areas.
- It was inserted into the Constitution in 1969 by the then Congress government, it also has a **provision for a Legislature and a Council of Ministers**.

Difference from the Sixth Schedule of the Constitution

- The Sixth Schedule of the Constitution – Articles 244(2) and 275(1) – is a special provision that allows for **greater political autonomy** and **decentralised governance** in certain tribal areas of the Northeast through autonomous councils that are administered by elected representatives.
- In Assam, the hill districts of **Dima Hasao, Karbi Anglong and West Karbi and the Bodo Territorial Region** are under this provision.
- **Article 244(A)** accounts for more autonomous powers to tribal areas.
- Among these the most **important power is the control over law and order**. In Autonomous Councils under the Sixth Schedule, they do not have jurisdiction of law and order.

International Commission of Jurists

Context

- The International Commission of Jurists (ICJ) called on the Centre and the State governments to comply with court orders regarding oxygen supply, hospital beds and medicines for COVID-19.
- The ICJ noted that India had reported over **2, 00,000 cases every day** since April 15 and 3, 60,960 cases on April 27, and the highest in the world.

About ICJ

- The International Commission of Jurists is an international human rights non-governmental organization.
- It is a standing group of 60 eminent jurists—including senior judges, attorneys and academics—who work to develop national and international human rights standards through the law.
- The composition of the Commission aims to reflect the geographical diversity of the world and its many legal systems.
- The Commission is supported by an International Secretariat based in Geneva, Switzerland, and staffed by lawyers drawn from a wide range of jurisdictions and legal traditions.
- The Secretariat and the Commission undertake advocacy and policy work aimed at strengthening the role of lawyers and judges in protecting and promoting human rights and the rule of law.

National Commission for Scheduled Castes (NCSC)

Context

- National Commission for Scheduled Castes (NCSC) launches "Online Grievance Management Portal" for Persons from Scheduled Castes on the occasion of 130th birth anniversary of Bharat Ratna Baba Saheb Dr. B. R. Ambedkar.

About the Portal

Purpose:

- NCSC Grievance Management portal would make it easier for Scheduled Castes population country to register their complaint from any part of the country.
- It shall enable them to file their application and other atrocity and services related grievances online and to get them addressed in a time bound manner.
- It is intended to make the hearing process work on similar lines as e-courts.

Introduction:

- The portal has been **designed in collaboration with the Bhaskaracharya Institute for Space Applications and Geoinformatics (BISAG-N)**, a Centre of Excellence under the Ministry of Electronics and Information Technology, Government of India.
- It will facilitate an **end-to-end e-filing of complaints and grievances and their tracking**.

Filing of Complaint:

- This portal is linked to the **Commission's website and one can file one's** complaint upon registering on it.
- The facility **to upload documents and audio/video files** is also available. This would supplement the physical submission of complaints and grievances.

About NCSC

Establishment:

- The National Commission for Backward Classes (NCBC) was set up in 1993.
- Later, the 102nd Amendment Act of 2018 conferred a constitutional status on the Commission.
- For this purpose, the amendment inserted a new Article 338-B in the constitution. Hence, the Commission ceased to be a statutory body and became a constitutional body.
- It is an **Indian constitutional body** under the jurisdiction of **Ministry of Social Justice and Empowerment**.

Membership:

- The Commission consists of a chairperson, a vice-chairperson and three other members.
- They are appointed by the President by warrant under his hand and seal. Their conditions of service and tenure of office are also determined by the President.

Purpose:

- Its objective is to **investigate and monitor all issues pertaining to the safeguards** provided for the **Scheduled Castes under any law** for the time being in force or under any order of the Government of India.
- The Commission also enquires **into specific complaints with respect to the deprivation of rights and safeguards provided** for the Scheduled Castes.
- It was established with a view to provide **safeguards against the exploitation of Scheduled Castes and Anglo Indian communities to promote and protect their social**, educational, economic and cultural interests, special provisions were made in the Constitution.

SUPACE (Supreme Court Portal for Assistance in Court's Efficiency)

Context

- Indian Judiciary has launched an artificial intelligence (AI) based portal in the judicial system.
- It is a perfect blend of human intelligence and machine learning. A hybrid one.

Purpose

- It is aimed at assisting judges with legal research "more efficiently, methodically and systematically" than a human mind.

Working of SUPACE

- It is a tool that collects relevant facts and laws and makes them available to a judge.
- It is not designed to take decisions, but only to process facts and to make them available to judges looking for an input for a decision.
- The interaction between a machine and **human being will lead to results customisable to the needs of a case and how a judge thinks**.

Acquittal based on benefit of Doubt

Context:

- The Supreme Court reiterated that acquittal based on a benefit of doubt in respect of a heinous or serious nature of crime cannot **make the candidate eligible for public employment**.
- It observed that an acquittal on the benefit of doubt is quite different from an honourable acquittal.

About the Case:

- The case pertained to recruitment of a police constable who was acquitted on benefit of doubt.
- Supreme Court rejected the argument of person citing that he shouldn't be employed as he was not given honourable acquittal.

Supreme Court Verdict:

On eligibility to public employment

- A person should be honourably acquitted of a heinous crime to be considered eligible for public employment.
- Acquittal in a criminal case does not automatically entitle a candidate for appointment to the post.

Rights of Employer

- Employer would be well within his rights to consider the antecedent and suitability of the candidate.
- The employer is entitled to take into account:
 - the job profile for which the selection is undertaken,
 - the severity of the charge levelled against the candidate
 - Whether the acquittal in question was an honourable acquittal or was merely on the ground of benefit of doubt as a result of composition.

About Honourable acquittal and benefit of doubt

The trial court after giving due consideration to the evidence placed on record and examining the witness may do any of the following

- Convict the person.
- Acquit the person unconditionally. In other words, it is a simpliciter acquittal.
- Acquitting the person by extending the "benefit of doubt" or due to the failure on the prosecution side to prove the guilt "beyond reasonable doubt".

Definition of Benefit of Doubt:

If an accused is acquitted or discharged:

- because of some technicality not having been complied with
- on the ground that though there is some evidence against him, he must be acquitted by giving the benefit of doubt

It may not amount to an honourable acquittal.

Honourable acquittal:

If an accused is acquitted:

- after full consideration of evidence because the prosecution witnesses are disbelieved
- the prosecution has miserably failed to prove the charges

It would amount to an honourable acquittal.

Draft Vision document on E-Court Phase III Project

Context

- The e-Committee Supreme Court has prepared the draft vision document for Phase III of the e-Courts Project under the auspices of the Supreme Court of India.
- E-Courts **Project is a mission mode project undertaken by the Department of Justice, Government of India.**

About Phase III of E-Court Project

- Phase III of the e-Courts Project in India is rooted in two central facets – access and inclusion.
- Phase III of the e-Courts Project envisions a judicial system that is:
 - more easily accessible irrespective of geographical distances,
 - efficient and equitable for every individual who seeks justice,
 - makes more efficient use of human and other resources,

- Absorbs the latest technology for a positive environmental impact.

This vision for Phase III is sought to be built on the following four building blocks

- **Core Values:** Phase III must strive for a modern judicial system, governed by core values of **trust, empathy, sustainability and transparency which, while simplifying** procedures, will maximise the positives of technology and minimise its risks and challenges.
- **Whole-of-system approach:** Phase III must aim to make processes more efficient across all three components of **dispute management i.e. dispute avoidance, containment and resolution**. Each of these components will require technological integration with different institutions.
- **Adoption frameworks:** Phase III must focus on building strong adoption frameworks. Such frameworks **must include behavioural nudges, adequate training and skill set development, feedback loops**, along with the requisite mandate of law.
- **Governance framework:** The **key goals and strategy of Phase III prioritise the creation of a core digital infrastructure that can enable the development of services** for dispute resolution by the judiciary and services of solutions for dispute containment and resolution by the ecosystem.

About E-Court Project

- The e-Committee of the Supreme Court has been overseeing the implementation of the e-Courts Project.
- It has been conceptualized **under the "National Policy and Action Plan for Implementation of Information and Communication Technology (ICT) in the Indian Judiciary-2005"**.
- The e-Committee has evolved in terms of its roles and responsibilities over the last fifteen years.

World Press Freedom Index

Context

- India was ranked 142nd out of 180 nation in the recently published world press freedom index.

Finding of the Index

- It has been topped by Norway followed by Finland and Denmark, while Eritrea is at the bottom.
- China is ranked 177, and is only above North Korea at 179 and Turkmenistan at 178.
- India has not slipped further from its position at 142 out of 180 countries, it continues to be classified as “bad” for journalism.
- India shares its ranks with nations such as Brazil, Mexico and Russia.
- India had consistently slid down from 133 in 2016.
- In the South Asian neighbourhood, Nepal is at 106, Sri Lanka at 127, Myanmar (before the coup) at 140, Pakistan at 145 and Bangladesh at 152.

Reasons behind India Rank

- journalists are exposed to every kind of attack, including police violence against reporters
 - ambushes by political activists
 - Reprisals instigated by criminal groups or corrupt local officials.
- Pressure has increased on the media to toe the government’s line.
- Criminal prosecutions are, meanwhile, often used to gag journalists critical of the authorities by invoking section 124A which pertains to sedition.
- Journalists who dare to criticize the government are branded as ‘anti-state,’ ‘anti-national’ or even ‘pro-terrorist’.
- The “arbitrary nature” of Twitter’s algorithms has also resulted in “brutal censorship” in India.

Example

- After being bombarded with complaints generated by troll armies about *The Kashmir Walla* magazine, Twitter suddenly suspended its account without any possibility of appeal.

About the Index

- The Press Freedom Index is an annual ranking of countries compiled and published by Reporters Without Borders since 2002.
- Based in Paris, RSF is an independent NGO with consultative status with the **United Nations, UNESCO, the Council of Europe and the International Organization of the Francophonie (OIF)**.

- It is based upon the organisation's own assessment of the countries' press freedom records in the previous year.

Objective:

- It intends to reflect the degree of freedom that journalists, news organisations, and netizens have in each country, and the efforts made by authorities to respect this freedom.
- Reporters Without Borders is careful to note that the index only deals with press freedom and does not measure the quality of journalism nor does it look at human rights violations in general.

Criteria:

- pluralism (measures the degree of representation of opinions in the media space)
- media independence
- environment and self-censorship
- legislative framework
- transparency, infrastructure, and abuses.

Constitutional Perspective about Freedom of Press in India

- Freedom of Speech and Expression in Article 19 of the Indian constitution include freedom of the press.
- The status of freedom of the press is the same as that of an ordinary citizen.
- The press cannot claim any immunity from taxation, is subject to the same laws regulating industrial relations, and press employees are subject to the same laws regulating industrial employment.
- Freedom of the press must be subject to those restrictions which apply to the freedom of speech and expression.
- In **Romesh Thapar v/s State of Madras** court observed that "Freedom of speech & of the press lay at the foundation of all democratic organization, for without free political discussion no public education, so essential for the proper functioning of the process of popular government, is possible.
- Freedom of press has three essential elements. They are:
 - Freedom of access to all sources of information,
 - Freedom of publication, and
 - Freedom of circulation.



GOVERNANCE

Durbar Move

Context

- A Durbar Move tradition of a century and a half is **set to be broken** in Jammu and Kashmir, with only "sensitive records" being taken from Jammu to Srinagar this summer, unlike in previous years when the entire administration and records would be shifted during "Durbar Move".

Background

- Durbar Move is a **tradition started 149 years ago** started by the erstwhile **Dogra rulers** who hailed from Jammu, but had expanded their boundaries to Kashmir including what is now Pakistan-occupied Kashmir, and Ladakh.

The tradition

- Durbar Move is a **bi-annual shifting of the Civil Secretariat and other offices** of the state government from Jammu to Srinagar in summer, and vice versa in winter.
- This is done as **Jammu & Kashmir has two capitals: Kashmir during summer and Jammu during winter.**

The reasons

- Jammu, Kashmir and Ladakh are very different from one another **geographically, linguistically and culturally**, and in those days **were poorly connected by road.**

- It is generally understood that the Durbar Move was started to **take the administration to the doorstep of the people of Kashmir**, which is closer to Ladakh.
- During summer, ruling from Kashmir also helped in ensuring adequate supplies to Ladakh, which is closer to Kashmir than Jammu, before the winter snowfall would cut off Ladakh.
- The practice also **enabled greater interaction and bonding among the people of Jammu, Kashmir and Ladakh.**

The effort

- Until 2019, the administration used to engage hundreds of trucks and buses for carrying office records and officials from one capital city to another.
- The Jammu & Kashmir police and paramilitary forces would **dominate the entire Jammu-Srinagar national highway for safe transportation.**
- The staff needed to be paid travel allowances and dearness allowance.
- It also involved expenses incurred on hiring trucks and buses.

The criticism

- **Historical Protest:** Voices of protest started during the late 1980s, over the **amount of money and time spent on the exercise.** However, the practice also enjoyed public support.
- **High Expenditure:** In recent years, many criticised the government for spending **nearly Rs 200 crore** on this exercise every year when it did not have enough funds even to pay salary to its employees.
- **No legal basis:** The Jammu & Kashmir High Court observed that **there was no legal justification or constitutional basis for the Darbar Move tradition.**
- **Opportunity cost:** The money saved could also be used to address Covid-related issues like food shortage, unemployment and healthcare.

Way Forward

- The UT government has decided to **switch to e-governance**, will all office records converted into **digital format.**
- As a result, while the Secretariat employees and some offices will move from Jammu to Srinagar as usual this year, **only sensitive records will be shifted from one place to another.**

Star Campaigner

Context

- Election Commission of India delisted Mr. Raja's name from the list of star campaigners of the DMK.

About Star Campaigner

- A star campaigner is a **celebrity vote seeker in an election** for a party.
- This person can be a politician or even a film star.
- There is **no law governing who can or cannot** be made a star campaigner.
- They are **nominated by the concerned political parties specifying their** constituencies and duration of the status.

Number of Star Campaigner

- Since political parties appoint star campaigners, the Election Commission has issued guidelines the Model Code of Conduct regulating poll campaign by them.
- A '**recognised**' party declared as such by the Election Commission -- **can nominate a maximum of 40 star campaigners.**
- An **unrecognised** political party can nominate a **maximum of 20 star campaigners.**

Rules Regarding Expenses concerning the star campaigner

- It has a lot to do with poll expenditure.
- The Election Commission keeps a tab on expenditure incurred by individual candidates during campaign Rs 70 lakh for most states in one constituency by each candidate.
- **Expenditure incurred on electioneering by the star campaigner is not added to a candidate's poll expenditure giving him/her more leeway.**
- According to the Representation of People's Act, these expenses will be borne by the political parties. But terms and conditions apply.

Terms and Conditions:

- For an individual candidate to get a relief from campaign expenditure, the **star campaigner has to limit oneself to general campaigning for the party.**
- If she/he shares stage with a candidate, the entire campaign cost except expenditure incurred on travelling will added to the candidate's election expenses.
- This applies even if the star campaigner seeks vote for the candidate taking his or her name.
- If more than one candidates share the stage with the star campaigner, the expenditure incurred on the rally will be shared equally by the contestants.
- If the candidates are not present but their posters or photographs have been displayed in their constituencies where a star campaigner holds a poll rally, **the entire expense will be added to the election expenses of the contestants.**

Chandler Good Government Index (CGGI)

Context

- India has been ranked 49th in the **Chandler Good Government Index (CGGI)**, which classifies 104 countries in **terms of government capabilities** and outcomes.

About Chandler Good Government Index

- The Chandler Good Government Index shows the importance of **measuring and investing in governance capabilities** that matter.
- It highlights a key **need for 'pracademics' in government – people who combine a rigorous understanding of research and data with a practical and grounded sense of what governments need to do to succeed.**
- **Finland has topped the CGGI list**, in which each country is measured across over 50 open data points.
- The index focuses on seven pillars:
 - leadership and foresight;
 - robust laws and policies;
 - strong institutions;
 - financial stewardship;
 - attractive marketplace;
 - global influence and reputation; and
 - helping people rise.

Register of Indigenous Inhabitants of Nagaland (RIIN)

Context

- The Nagaland government has decided to form a joint consultative committee (JCC) involving all traditional tribal bodies and, civil society organisations for taking an exercise **to register the State's indigenous inhabitants.**

About the Register

- In July 2019, the Nagaland government launched the RIIN, seen as a variant of Assam's National Register of Citizens.
- **December 1, 1963** – the day Nagaland attained Statehood – was the **cut-off date for determining the "permanent residents" of the State.**
- Apart from non-Nagas, the "outsiders" implied **Nagas living in areas beyond the boundaries of Nagaland could be left out of the RIIN.**
- **Abhijit Sinha Committee** is made responsible for **preparing the Register of Indigenous Inhabitants of Nagaland (RIIN).**

Functions of RIIN committee

- The eligibility criteria to be an indigenous inhabitant.
- Authority to authenticate claims of being indigenous.
- Place of registration as indigenous inhabitant.

- The basis of claims of being indigenous.
- The nature of documents that will be acceptable as proof of being indigenous.

International Virtual Election Visitors Programme (IVEP) 2021

Why in News

- Election Commission of India recently hosted International Virtual Election Visitors Programme (IEVP) 2021 for Election Management Bodies (EMBs) /Organisations from 26 countries and 3 International Organisations during the ongoing elections for Legislative Assemblies of Assam, Kerala, Puducherry, Tamil Nadu and West Bengal.

About IVEP

- IEVP 2021 would provide the participants an overview of the
 - Large canvas of Indian electoral process.
 - The new initiatives taken by ECI on voter facilitation.
 - Transparency and accessibility of electoral system
 - ECI's response to the changing needs of training and capacity building.
 - The new formats necessitated by COVID-19.
 - Provide insights into the elections underway in the states of Assam, Kerala, Tamil Nadu, West Bengal and the Union Territory of Puducherry.

Online Dispute Resolution

Why in News

- NITI Aayog—in association with Agami and Omidyar Network India and with the support of ICICI Bank, Ashoka Innovators for the Public, Trilegal, Dalberg, Dvara, NIPFP—will launch the first-of-its kind Online Dispute Resolution (ODR) handbook in India.

About the Handbook

- The handbook is an invitation to business leaders to adopt ODR in India. It highlights the need for such a mechanism, the models of ODR that businesses can adopt and an actionable pathway for them.

About ODR

- ODR is the resolution of disputes outside courts, particularly of small and medium-value cases, using digital technology and techniques of alternate dispute resolution (ADR), such as negotiation, mediation, and arbitration.
- While courts are becoming digitized through the efforts of the judiciary, more effective, scalable, and collaborative mechanisms of containment and resolution are urgently needed.
- ODR can help resolve disputes efficiently and affordably.

SOCIAL JUSTICE

Eat Smart and Transport 4 All Challenge

- Government has launched the Eat Smart Cities Challenge and Transport 4 All Challenge

EatSmart Cities Challenge

Purpose

- This movement will nudge the urban populace to make the right food choices and help build a healthier and happier nation.
- It aims in creating social and behavioural change towards food safety, hygiene and nutrition.
- It aims to motivate Smart Cities to develop a plan that supports a healthy, safe and sustainable food environment supported by institutional, physical, social, and economic infrastructure.
- It aims to create application of 'smart' solutions to combat food related issues.
- This will complement the remarkable work being done in the Smart Cities Mission".

About the Challenge:

- **Organizer:** It was organized in association with **Food Safety and Standards Authority of India (FSSAI)** under the aegis of Ministry of Health and Family Welfare.
- **Participation:** The challenge is **open to all Smart Cities**, capital cities of States /UTs, and cities with a population of more than 5 lakh.
- **Implementation:** At the end of **first phase of the challenge**, **11 cities** will be selected for deeper engagement for an extended period to implement their vision.

Transport 4 All Challenge

Purpose:

- It will support cities to recover from this mobility crisis caused by covid lockdown.
- It aims to **develop digital solutions that will make public transport safe, affordable, comfortable, and reliable for all.**
- **It will** support the cities and start-ups all over the country to move towards digital transformation in urban mobility.
- The Challenge aims to bring together cities, citizen groups, and start-ups to develop solutions that improve public transport to better serve the needs of all citizens.

About the Challenge:

- **Organizer:** The **Ministry of Housing and Urban Affairs** launched the Transport 4 All challenge in collaboration with ITDP.
- **Participation:** All the **Smart Cities Mission cities, capitals of states and union territories (UTs), and all cities with a population of over 5 lakhs** – are eligible for the Challenge.

Three Stages of the Challenge

- **Stage I PROBLEM IDENTIFICATION:** Cities, with the support of NGOs, identify key recurring problems that citizens and public transport operators face.
- **Stage II SOLUTION GENERATION:** Start-ups develop prototypes of solutions to improve public transport with inputs from cities and NGOs.
- **Stage III PILOT TESTING:** Cities engage start-ups for large-scale pilots and refine the solutions based on citizen feedback.

Deen Dayal Upadhyaya Kaushalya Yojana (DDU-GKY)

Context:

- Alumni meets organized across the country under Deen Dayal Upadhyaya Kaushalya Yojana (DDU-GKY), commemorating 75 years of Independence.

Introduction:

- It is one of the cluster of initiatives of the Ministry of Rural Development, Government of India that seeks to promote rural livelihoods.

Purpose

- It aims to skill rural youth who are poor and provide them with jobs having regular monthly wages or above the minimum
- It is a part of the National Rural Livelihood Mission (NRLM) - the Mission for poverty reduction called Aajeevika.
- This scheme derives importance from its potential to reduce poverty.
- It is also designed to be a major contributor to the Prime Minister's 'Make in India' campaign.
- To reduce poverty by enabling poor for households to access gainful and sustainable employment through employment that provides regular wages.
- The scheme will benefit more than 55 million poor rural youth who are ready to be skilled by providing sustainable employment.

Guiding Principles

- **Creation of demand:** There is a strong demand for the economic opportunities among the poor, as well as immense opportunities in term of developing their work abilities.

- Networking of institutions: Social mobilization as well as a network of strong institutions is essential in order to develop India demographic surplus into a dividend.
- **Quality and standards:** Quality and standards are paramount in the delivery of skilling, in order to make the rural poor desirable to both Indian and global employer.

Approach of DDU-GKY

- Shift in emphasis - from training to career progression
- Enable poor and marginalized to access benefits from growth
- Ease the pain of migration when it is inevitable
- Proactive approach to building partnerships
- Monitoring of inputs and outputs, where main focus is on Placement i.e. output
- It enables states to take full ownership of DDU-GKY projects it has been decided not to consider any more Multi State Projects (MSP)
- State government as the main player - Single State Project (SSP) to Annual Action Plans (AAP)
- Enhancing the Capacity of Project Implementing Agencies (PIAs)

Coverage of the scheme of DDU-GKY

- DDU-GKY is applicable to the entire country.
- The scheme is being implemented currently in 33 States/UTs across 610 districts partnering currently with over 202 PIAs covering more than 250 trades across 50+sectors.

Aahaar Kranti

Context

- Dr Harsh Vardhan will launch a new mission called 'Aahaar Kranti'

About Aahaar Kranti

Purpose

- The mission is aimed to spread the message of the need for a nutritionally balanced diet and to understand the importance of accessible to all local fruits and vegetables.
- Fruits and vegetables make a large part of a balanced diet.
- The movement proposes to address the current situation of hunger in abundance by working to rouse the people to the values of India's traditional diet.
- The programme will focus on training teachers, who, in turn, will pass on the message to the multitudes of students, and through them to their families and finally the society at large.
- Such a strategy was adopted for the eradication of Polio and it turned out to be a grand success.
- In terms of objectives, it will seek to promote better awareness, better nutrition and better agriculture; the content will be provided both online and offline and in all vernacular languages besides English and Hindi to reach out to as many as possible.

Motto

- **Motto:** Vijnana Bharati (Vibha) and Global Indian Scientists' and Technocrats' Forum (GIST) have come together to launch the mission with the motto of उत्तमआहार-उत्तमविचार (Uttam Aahaar Uttam Vichaar) or 'Good Diet-Good Cognition'.

Need for it

- Studies estimate that India produces as much as two times the amount of calories that it consumes.
- However, many in the country are still malnourished. The root cause of this strange phenomenon is a **lack of nutritional awareness in all sections of our society.**
- The United Nations has also declared 2021 as the International Year of Fruits and Vegetables, which vibes very well with Aahaar Kranti.
- **UN sustainable goal # 3** that emphasizes on human well-being reads, "Ensure healthy lives and promote well-being for all at all ages."

Role of Ayurveda

- India has the unique advantage of having the knowledge of Ayurveda.

- It is time to also apply this rich knowledge of Ayurveda-based nutrition to practice. The movement will work on this too.

Atal Innovation Mission

Context

- India-Denmark join hands through Atal Innovation Mission for global collaboration towards world class innovative solutions addressing water challenges & SDGs.

About the Partnership

- Under this ambitious partnership, NITI Aayog and Embassy of Denmark to India is to jointly work towards promoting innovation and entrepreneurship amongst the aspiring entrepreneurs.
- This initiative will also focus on water use in agriculture that takes up to 92 percent of the water.

Target

It will stress on three key and **crucial points Water, Women, and the World.**

- Water is the stream of life hence its **importance for present and future generations cannot** be stressed enough.
- Women empowerment is key to the **growth of a nation and to the sustainability goals** of the World.
- If we do not solve **water management and challenges issue, regardless of the location**, it will impact lives across the world.

About Atal Innovation Mission

- Launched by Atal Innovation Mission of NitiAyog.
- Flagship initiative set up by the NITI Aayog to promote innovation and entrepreneurship.
- Envisaged as an umbrella innovation organization.
- Play an instrumental role in alignment of innovation policies between central, state and sectoral innovation schemes.
- Long term goals of AIM include establishment and promotion of Small Business Innovation Research and Development at a national scale (AIM SBIR) for the SME/MSME/startups.

Gender Gap Index

Context

- India had ranked 112th among 153 countries in the Global Gender Gap Index 2020.

Key findings

- India has slipped **28 places to rank 140th among 156 countries** in the World Economic Forum's Global Gender Gap Report 2021, becoming the third-worst performer in South Asia.
- According to the report, **India has closed 62.5% of its gender gap** till date.
- Noting that the **decline also took place on the economic participation and opportunity sub-index**, India's gender gap on this dimension widened by 3% this year, leading to a 32.6% gap closed till date.
- Most of the **decline occurred on the political empowerment sub-index**, where India regressed 13.5 percentage points, with a significant decline in the number of women ministers.
- In South Asia, **only Pakistan and Afghanistan ranked** below India.

Global Scenario

- For the 12th time, **Iceland is the most gender-equal country** in the world. The top 10 most gender-equal countries include Finland, Norway, New Zealand, Rwanda, Sweden, Ireland and Switzerland.

Reasons behind the decline

- Among the drivers of this decline is a **decrease in women's labour force participation rate**, which fell from 24.8% to 22.3%.
- In addition, the **share of women in professional and technical roles declined** further to 29.2%.
- The share of women in **senior and managerial positions also remains low**: only 14.6% of these positions are held by women and there are only 8.9% firms with female top managers.
- Further, the estimated earned **income of women in India is only one-fifth of men's**, which puts the country among the bottom 10 globally on this indicator.

- Discrimination against women is also reflected in the **health and survival sub index** with 93.7% of this gap closed to date, India ranks among the bottom five countries in this sub index.
- **Wide gaps in sex ratio at birth** are due to the high incidence of **gender-based sex-selective practices**.
- In addition, more than one in four **women has faced intimate violence in her lifetime**.
- Gender gaps persist in **terms of literacy: one third of women are illiterate [34.2%] compared to 17.6% of men**.

About Global Gender Gap Index

- **Published by:** World Economic Forum
- Indicators:
 - economic participation and opportunity
 - educational attainment
 - health and survival and
 - political empowerment.
- It also examines the drivers of gender gaps and outlines the policies and practices needed for a gender-inclusive recovery.

AIM-PRIME

Context

- Atal Innovation Mission (AIM), NITI Aayog launched AIM-PRIME (Program for Researchers on Innovations, Market-Readiness & Entrepreneurship), an initiative **to promote and support science-based deep-tech startups & ventures across India**.

About AIM-PRIME

- AIM has joined hands with **Bill & Melinda Gates Foundation (BMGF)** to launch this nationwide program, which will be implemented by Venture Center - a non-profit technology business incubator.

Participation:

- The program is also **open to CEOs and senior incubation managers of AIM** Funded Atal Incubation Centers that are supporting deep tech entrepreneurs.
- The first cohort of the program is **open to technology developers (early-stage deep tech start-ups, and scientists/engineers/ clinicians) with strong science-based deep tech business ideas**.
- The benefits of this program are aimed at **addressing specific issues through training and guidance over a period of 12 months**.

Purpose:

- Candidates selected for the program will get access to in-depth learning via a comprehensive lecture series, live team projects, exercises, and project-specific mentoring.
- They will also have access to a deep tech start up playbook, curated video library, and plenty of peer-to-peer learning opportunities.
- The AIM-PRIME program is specifically tailored for the rapid scaling up of deep-tech science ventures in India, providing not just the necessary intellect and support but also the exposure they rightly deserve.

SWAMITVA scheme

Why in News

- Prime Minister, Shri Narendra Modi has recently launched the distribution of e-property cards under the SWAMITVA scheme on National Panchayati Raj Day through video conferencing.
- 4.09 lakh property owners were given their e-property cards on this occasion, which also marked the rolling out of the SVAMITVA scheme for implementation across the country.

About The Scheme

- SVAMITVA Scheme is a Central Sector scheme launched by Hon'ble Prime Minister of India on National Panchayat Day i.e. 24th April 2020.
- **Ministry of Panchayati Raj (MoPR) is the Nodal Ministry** for implementation of the scheme.

- In the States, the Revenue Department / Land Records Department will be the Nodal Department and shall carry out the scheme with support of State Panchayati Raj Department.
- Survey of India shall work as the technology partner for implementation.

Aims and Objectives

- The scheme aims to provide an integrated property validation solution for rural India.
- The demarcation of rural areas would be done using Drone Surveying technology.
- This would **provide the record of rights' to village household owners possessing houses in inhabited rural areas in villages** which, in turn, would enable them to use their property as a financial asset for taking loans and other financial benefits from Bank.

The scheme seeks to achieve the following objectives

- To bring financial stability to the citizens in rural India by enabling them to use their property as a financial asset for taking loans and other financial benefits.
- Creation of accurate land records for rural planning.
- **Determination of property tax, which would** accrue to the GPs directly in States where it is devolved or else, add to the State exchequer.
- **Creation of survey infrastructure and GIS maps that can** be leveraged by any department for their use.
- **To support in preparation of better-quality Gram Panchayat Development Plan (GPDP)** by making use of GIS maps.
- To reduce **property related disputes and legal cases.**

Conclusion

- The **pilot phase of the Scheme was implemented during 2020–2021 in the States of Maharashtra, Karnataka, Haryana, Uttar Pradesh, Uttarakhand, Madhya Pradesh and select villages of Punjab and Rajasthan.**
- It **paves the way for using the property as a financial asset** by villagers for availing loans and other financial benefits. The Scheme will cover around 6.62 Lakh villages of the entire country during 2021-2025.

SARTHAQ

Why in News

- The **Department of School Education and Literacy** has developed an indicative and suggestive Implementation Plan for School Education, called "Students" and Teachers" Holistic Advancement through Quality Education (SARTHAQ)."

About the Initiative

- SARTHAQ has also been **prepared as an evolving and working document** and is broadly suggestive/indicative in nature and **will be updated from time to time** based on the inputs/feedback received from the stakeholders.

Expected outcome

- New National and State Curriculum Frameworks for School Education , Early Childhood Care and Education, Teacher Education and Adult Education will be developed encompassing the spirit of NEP and will pave way for curriculum reforms
- **Increase in Gross Enrolment Ratio (GER), Net Enrolment Ratio (NER),** transition rate and retention rate at all levels and reduction in drop outs and out of school children.
- **Access to quality ECCE and Universal Acquisition of Foundational Literacy** and Numeracy by Grade 3.
- **Improvement in Learning Outcomes at all stages** with emphasis on teaching and learning through mother tongue/local/regional languages in the early years.
- Integration of vocational education, sports, arts, knowledge of India, 21st century skills, values of citizenship, awareness of environment conservation, etc. in the curriculum at all stages.
- **Introduction of Experiential learning at all stages and** adoption of innovative pedagogies by teachers in classroom transaction.
- **Reforms in Board exams and various** entrance tests.
- **Development of high quality and diversified teaching-learning** material.
- **Availability of text books in Regional/local/home language.**

- Improvement in quality of Teacher Education Programmes.
- **Improvement in quality of newly recruited teachers and capacity building** through Continuous Professional Development.
- Safe, Secure, inclusive and conducive learning environment for students and teachers.
- Improvement in infrastructure facilities including barrier free access and sharing of resources among schools.
- **Uniform standards in learning outcomes and governance across public** and private schools through setting-up of an online, transparent public disclosure system through establishment of SSSA in states.
- **Integration of technology in educational planning and governance and availability** of ICT and quality e-content in classrooms.

Conclusion

- It is envisaged that the implementation of SARTHAQ would benefit all stakeholders including 25 crore students, 15 lakh schools, 94 lakh teachers, Educational Administrators, Parents, and community as education is the backbone of an equitable and just society.

Post Matric Scholarship Scheme

Why in News

- Central Government has released **an amount of Rupees Thirty Nine Crore Eighty Six Lakh only as Central Assistance to the State Government of Madhya Pradesh** under the Centrally Sponsored Scheme of Post-Matric Scholarship for OBC Student during the year 2020-21.

About Post Matric Scholarship Scheme for Scheduled Castes

- It is a Centrally Sponsored Scheme and implemented through State Governments and UT administrations.
- The Scheme provides financial assistance to the Scheduled Caste students studying at post matriculation or postsecondary stage to enable them to complete their education.
- Scholarships will be paid to the students whose parents/guardians 'income from all sources does not exceed Rs. 2, 50,000/- per annum.
- The scholarship includes maintenance allowance, reimbursement of fees, study tour charges, book allowances, etc.

Objective

- The objective of the scheme is to appreciably increase the Gross Enrolment Ratio of SC students in higher education with a **focus on those from the poorest households, by providing financial assistance at post matriculation or post-secondary stage** to enable them to complete their education.
- These scholarships are **available for studies in India only**
- The awardees are **selected by the State Government/Union Territory to which the applicant actually belongs (i.e. the State/UT in which permanently settled or domiciled, as per the terms of domicile decided by the State).**
- This is **applicable to all the students who are currently beneficiaries of the scheme** as well as fresh admissions.

Gender Samvaad

Why in News

- Gender Samvaad event, a **joint attempt between DAY-NRLM and the Initiative for What Works to Advance Women and Girls in the Economy (IWWAGE)** to create a common platform to share experiences emerging from this effort, was organised today by the Ministry of Rural Development, Govt. of India.
- The attempt is to **generate greater awareness on gender related interventions under DAY-NRLM across the country and best practices**, with a focus on hearing voices from the states and the field.

About the Event

- Gender Samvaad provides states with opportunities to:
- Understand **best practices/initiatives that other states have been undertaking to improve women's agency (e.g. facilitating women's access to land rights, their engagement in farmer producer organizations (FPOs)**
- Understand gender interventions globally;

- Engage with **experts and other colleagues** on suggestions regarding how to handle issues/implementation barriers;
- Contribute to **creation of a gender repository'** with resource materials on best practices for gender interventions across the country/other countries.
- Build advocacy around the **need to focus on gender issues across SRLMs** and the NRLM.

Anamaya

- Recently, government of India has launched Anamaya the Tribal Health Collaborative.

About the Program

- The Collaborative is a multi-stakeholder initiative of the Tribal Affairs Ministry supported by Piramal Foundation and Bill and Melinda Gates Foundation (BMGF).
- It will converge efforts of various Government agencies and organisations to enhance the health and nutrition status of the tribal communities of India.
- This Collaborative is a unique initiative bringing together governments, philanthropists, national and international foundations, NGOs/CBOs to end all preventable deaths among the tribal communities of India.

Objective

- It aims to build a sustainable, high-performing health eco-system to address the key health challenges faced by the tribal population of India.

Implementation

- It will **begin its operations with 50 tribal, Aspirational Districts** (with more than 20% Scheduled Tribe population) across 6 high tribal population states.
- Over a 10-year period, the **work of the THC will be extended to 177 tribal Districts** as recognised by the Ministry of Tribal Affairs.

E9 initiative: Scaling up digital learning to accelerate progress towards SDG4

Context

- Recently government addressed at the consultation meeting of Education Ministers of E9 countries on E9 initiative **"Scaling up digital learning to accelerate progress towards SDG4"**.

About the E9 initiative

- The E9 is a forum of nine countries, which was formed to achieve the goals of UNESCO's Education For All (EFA) initiative.
- The "E" stands for education and the "9" represents the following nine countries: Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria and Pakistan, representing over half of the world's population and 70% of the world's illiterate adults.
- E-9 Initiative was launched in 1993 at the EFA Summit in New Delhi, India.
- E-9 Initiative has become a forum for the countries to discuss their experiences related to education, exchange best practices, and monitor EFA-related progress.

Purpose

- The initiative aims to **accelerate recovery and advance the Sustainable Development Goal 4 agenda** by driving rapid change in education systems in three of the 2020 Global Education Meeting priorities:
 - (i) support to teachers;
 - (ii) investment in skills; and
 - (iii) narrowing of the digital divide.

Sankalp Se Siddh

About the Program:

- **TRIFED under Ministry of Tribal Affairs has launched "Sankalp se Siddhi"** - Village & Digital Connect Drive.
- This 100 day drive will entail 150 teams (10 in each region from TRIFED and State Implementation Agencies/Mentoring Agencies/Partners) visiting ten villages each.

- 100 villages in each region and 1500 villages in the country will be covered in the next 100 days.
- The main aim of this **drive is to activate the Van Dhan Vikas Kendras** in these villages.
- The visiting teams will also identify locations and shortlist potential VDVks for clustering as TRIFOOD, and SFURTI units as larger enterprises.
- They will also **identify tribal artisans and other groups and empanel them as suppliers so that they can have access to** larger markets through the Tribes India network – both physical outlets and TribesIndia.com.

Self-Help Groups:

- Informal associations of people who come together to improve their living conditions.
- Institutionalised **through SHG Bank linkage project by NABARD in 1992.**
- National Rural Livelihoods Mission (NRLM) aims to promote self-employment in rural areas through formation of Self Help groups.

About TRIFED (Tribal Cooperative Marketing Development Federation of India):

- Launched in 1987 by the Ministry of Tribal Affairs.
- Two significant functions:
 - **Retail Marketing of Tribal Products**
 - **Development of MFP (Minor Forest Produce)**
- Acts as a medium and a facilitator for selling of tribal products.
- Launched Tribes India an online e-commerce platform for selling the product of tribals.

Van DhanYojana

Context:

- **Setting up of 1,205 tribal** enterprises employing 3.6 lakh people through 18,000 Self Help Groups (SHG).
- **Sales of 3.5 crore worth** of produce.

Launched by	<ul style="list-style-type: none"> • Trifed India in 2018
Implementing agencies	<ul style="list-style-type: none"> • National Level : Ministry of Tribal affairs • Central level: Trifed India • State Level: Nodal agencies for Minor Forest Produce Scheme • Unit Level: SHG
Objectives	<ul style="list-style-type: none"> • Economic development of tribals involved in the collection of Minor Food Produces • Optimum utilization of natural resources • Providing sustainable livelihood
Methods	<ul style="list-style-type: none"> • Constitution of Van Dhan Vikas Kendra • Provide Skill Upgradation and Capacity building training • Setting up of Primary Processing and Value addition facilities • Formation of SHG comprising of tribals • Linking of SHG with Van Dhan Vikas Kendra • Provide Working Capital to Van DhanVikas Kendra
Success Story	<ul style="list-style-type: none"> • Hill broom project of Tribals inLangleng village of Nagaland • Earlier: Sell the Broom Grass at Rs. 7 a kg • Now: Sells the broom made up of the Grass at Rs .60 a broom. Sells 4-5 brooms per day.
Other Products	<ul style="list-style-type: none"> • Aloe vera soaps and gooseberry wine in the north east • mohaladdu and, amlamurabba [preserved gooseberries] in Maharashtra and Rajasthan • tamarind blocks, dried tendu leaves, processed mahua, lac bangles and eco-friendly leaf plates from Chhattisgarh, Jharkhand and Andhra Pradesh.

State of World Population Report-2021

Context

- United Nations Population Fund's (UNFPA) flagship State of World Population Report 2021 titled 'My Body is My Own' has been launched.

Key findings of the report

- The report, 'My Body is My Own', shows only 55% of women are fully empowered to make choices.
- Nearly half the women from 57 developing countries do not have the right to make decisions regarding their bodies, including using contraception, seeking healthcare or even on their sexuality.
- Only 55% of women are fully empowered to make choices over healthcare, contraception and the ability to say yes or no to sex.
- Only 75% of countries legally ensure full and equal access to contraception..
- Some examples of violation of bodily autonomy include:
 - child marriage,
 - female genital mutilation,
 - a lack of contraceptive choices leading to unplanned pregnancy
 - unwanted sex exchanged for a home and food or when people with diverse sexual orientations and gender identities cannot walk down a street without fearing assault or humiliation.

India's condition

- In India, according to NFHS-4 (2015-2016), only about **12% of currently married women (15-49 years of age) independently make decisions about their own healthcare**, while 63% decide in consultation with their spouse.
- For a quarter of women (23%), it is the spouse that mainly takes decisions about healthcare.
- Only 8% of currently married women (15-49 years) take decisions on the use of contraception independently, while 83% decide jointly with their spouse.
- Only 47% women using a contraceptive were informed about the side effects of the method.

About United Nations Population Fund

Introduction

- It is a subsidiary organ of the UN General Assembly and works as a sexual and reproductive health agency.
- The UN Economic and Social Council (ECOSOC) establishes its mandate.

History

- It was established as a trust fund in 1967 and began operations in 1969.
- In 1987, it was officially renamed the United Nations Population Fund but the original abbreviation, 'UNFPA' for the United Nations Fund for Population Activities was retained.

Purpose

- UNFPA works directly to tackle Sustainable Development Goals on health (SDG3), education (SDG4) and gender equality (SDG5).

Funding

- UNFPA is not supported by the UN budget, instead, it is entirely supported by voluntary contributions of donor governments, intergovernmental organizations, the private sector, foundations and individuals.

HEALTH

Integrated Health Information Platform (IHIP)

- It is the next generation highly refined version of the presently used Integrated Disease Surveillance Programme (IDSP).
- The new version of IHIP will house the data entry and management for India's disease surveillance program.

Features

- It will be tracking 33 diseases now as compared to the earlier 18 diseases.
- It shall ensure near-real-time data in digital mode, having done away with the paper-mode of working.

- IHIP will provide health information system developed for real time, case-based information, integrated analytics, advanced visualization capability.
- It will provide analyzed reports on mobile or other electronic devices.
- Outbreak investigation activities can be initiated and monitored electronically.
- It can easily be integrated with other ongoing surveillance program, while having the feature of addition of special surveillance modules.

Benefits

- India's information system for precision public health is essential for delivering 'the right intervention at the right time, every time to the right population.
- It will help in providing accurate, reliable and timely information.
- With IHIP, collection of authentic data will become easy as it comes directly from the village/block level, the last mile from the country.
- It will lead towards AtmaNirbha Bharat in healthcare through use of technology.
- This refined digital surveillance platform will help to provide and connect data and move towards 'One Health' approach.
- The refined IHIP with automated -data will help in a big way in real time data collection, aggregation & further analysis of data that will aid and enable evidence-based policy making.
- It is in sync with the National Digital Health Mission and fully compatible with the other digital information systems presently being used in India.

Collection of Data

- Data will be provided in real time
 - through the grassroots healthcare workers through their gadgets (tablets);
 - the doctors at the PHC/CHC/SHD/DH when the citizens seek healthcare;
 - the diagnostic labs which will provide data on the tests carried out.+

Integrated Disease Surveillance Project

- Launched in 2004.
- Objective is to **strengthen/maintain decentralized laboratory based IT enabled disease surveillance system for epidemic prone diseases.**
- Under IDSP data is collected on epidemic prone diseases on weekly basis (Monday–Sunday).
- The information is **collected on three specified reporting formats, namely "S" (suspected cases), "P" (presumptive cases) and "L" (laboratory confirmed cases)** filled by Health Workers, Clinicians and Laboratory staff respectively.
- The weekly data gives information on the disease trends and seasonality of diseases.

National Digital Health Mission

- Under the mission, every Indian will get a new Aadhar-like health ID that will store the individual's medical records, including doctor visits, diseases, the line of treatment and drugs taken.
- The scheme will map every citizen's health with a unique ID.
- This will also come integrated with the facility of using telemedicine, e-pharmacy, creating a national health registry.
- From a doctor's appointment to hospitalisation for any treatment, this ID will become essential.
- The key feature of this mission is the technology part - it will leverage open digital systems to provide high-quality healthcare for all.
- It will integrate various digital health services to create an ecosystem which can assimilate existing health information systems.

National Policy for Rare Diseases, 2021

Context

- Recently government has approved the "National Policy for Rare Diseases 2021"

Need of the Policy

- The field of rare diseases is very complex and heterogeneous and prevention, treatment and management of rare diseases has multiple challenges.
- Early diagnosis of rare diseases is a major challenge owing to a variety of factors :
 - lack of awareness among primary care physicians,
 - lack of adequate screening and diagnostic facilities etc.
- There are also **fundamental challenges in the research and development for the majority of rare diseases as relatively little is known** about the pathophysiology or the natural history of these diseases particularly in the Indian context.
- Rare diseases are also **difficult to research upon as the patients pool is very small** and it often results in inadequate clinical experience.
- **Availability and accessibility to medicines are also important to reduce morbidity** and mortality associated with rare disease.
- The **cost of treatment of rare diseases is prohibitively expensive.**
- Various High Courts and the Supreme Court **have also expressed concern about lack of a national policy for rare diseases.**

Objective of the Policy

- The Rare Diseases Policy aims to lower the high cost of treatment for rare diseases
- It has increased focus on indigenous research with the help of a National Consortium to be set up with Department of Health Research, Ministry of Health & Family Welfare as convenor.
- It also aims to strengthen tertiary health care facilities for prevention and treatment of rare diseases

Features

- The policy also **envisage creation of a national hospital based registry of rare diseases** so that adequate data is available for definition of rare diseases and for research and development related to rare diseases within the country.
- The Policy also **focuses on early screening and prevention through primary and secondary health care infrastructure such as Health and Wellness Centres and District Early Intervention Centres (DEICs) and through counseling for the high-risk parents.**
- It has **designated 8 health facilities as Centre of Excellence and these CoEs will also be provided one-time financial support of up to Rs 5 crores for upgradation of diagnostics facilities.**

About the Beneficiaries

- Beneficiaries for such financial assistance **would not be limited to BPL families.**
- The **benefit will be extended to about 40% of the population, who are eligible under Pradhan Mantri Jan Arogya Yojana.**

Financing

- A provision for **financial support up to Rs. 20 lakhs under the Umbrella Scheme of Rastriya Arogya Nidhi is proposed for treatment**, of those rare diseases that require a one-time treatment (diseases listed under Group 1 in the rare disease policy).
- Besides, the **Policy also envisages a crowd funding mechanism in which corporates and individuals will be encouraged to extend financial support through a robust IT platform for treatment of rare diseases.**

MANAS

Context:

- Government launched Community Mental-Health Digital platform MANAS.

Aim:

- **Aim:** "MANAS" App will promote wellbeing across age groups.

About MANAS:

- With a motto of **Uttam Mann, Saksham Jan**, MANAS as an initiative is intended to build a healthier and happier community, to empower it to nurture its innate potential for building a Swasth and Aatmanirbhar Bharat.

- Catering to the overall wellbeing of people of all age groups, the initial version of MANAS focuses on **promoting positive mental health in the age group of 15-35 years**.
- It stands for **Mental Health and Normalcy Augmentation System** was endorsed as a national program by the **Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC)**.
- It is a **comprehensive, scalable, and national digital wellbeing platform** and an app developed to augment mental well-being of Indian citizens.
- It integrates the **health and wellness efforts of various government ministries, scientifically validated indigenous tools with gamified interfaces** developed/researched by various national bodies and research institutions.
- It was **initiated by the Office of the Principal Scientific Adviser to the Government of India**. It was jointly executed by NIMHANS Bengaluru, AFMC Pune and C-DAC Bengaluru.

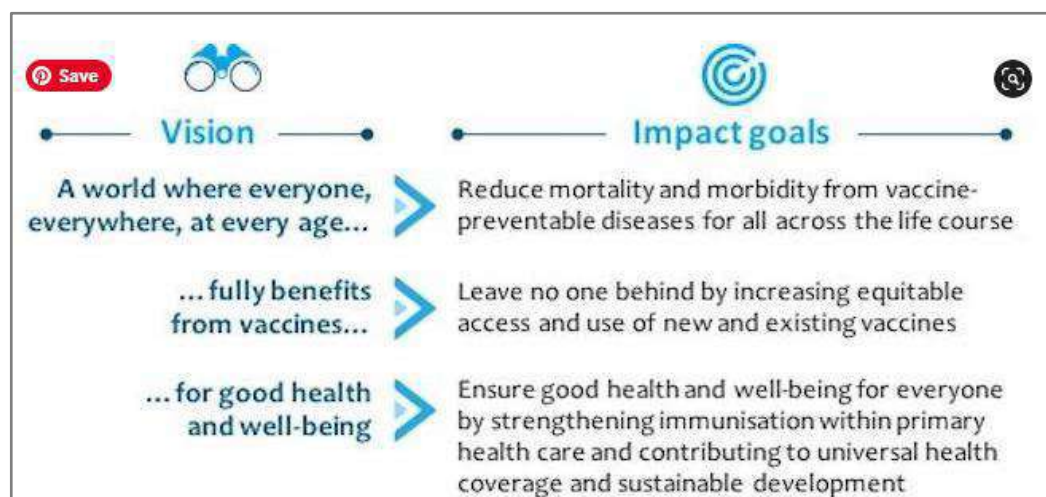
Immunization Agenda 2030: A Global Strategy to Leave No One Behind

Introduction

- Recently, the United Nations and other agencies have launched the Immunisation Agenda 2030 (IA2030) during the World Immunisation Week.

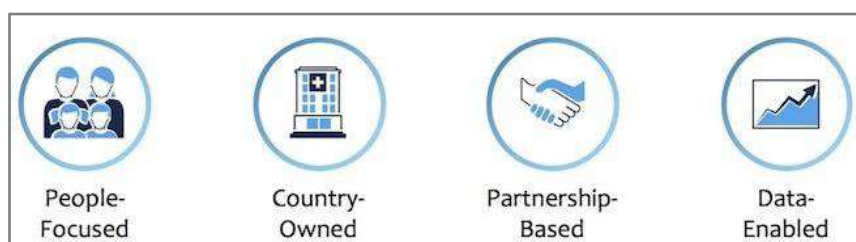
Strategic Priorities

- IA2030 has been developed through a **"bottom-up"** co-creation process
- It is in with close engagement of countries to ensure that the vision, strategic priorities and goals are aligned with country needs.



Core Principles

- The IA 2030 strategy – to extend the benefits of vaccines to everyone, everywhere – is underpinned by four core principles:
 - it puts **people** in the centre,
 - is led by **countries**,
 - implemented through broad **partnerships**,
 - driven by **data**.



POLICY

Central Vigilance Commission's new guidelines on Transfer and Posting

Context

- The Central Vigilance Commission (CVC) has modified the guidelines pertaining to the **transfer and posting of officials in the vigilance units of government organisations**, restricting their tenure to three years at one place.

New guidelines

- The tenure **may be extended to three more years**, albeit at a different place of posting.

- Personnel can **have two continuous postings in vigilance units**, at different places of posting, each running into a maximum of three years.
- Personnel who **have worked for over three years at one place should be transferred in phases**, with priority given to those who have served for the maximum period.
- Those having completed over five years at one place should be shifted on top priority basis.

About CVC

- Central Vigilance Commission (CVC) is an **apex Indian governmental body** created in 1964 to address governmental corruption.
- In 2003, the Parliament enacted a law conferring **statutory status on the CVC**.
- It has the status of an autonomous body, **free of control from any executive authority**.
- It was set up by the Government of India on the recommendations of the Committee on Prevention of Corruption, headed by **Shri K. Santhanam Committee**.
- The Commission shall consist of:
 - A Central Vigilance Commissioner - Chairperson;
 - Not more than two Vigilance Commissioners - Members.

Functions of CVC

- It is charged with monitoring all vigilance activity under the Central Government of India.
- It advises various authorities in central Government organizations in planning, executing, reviewing and reforming their vigilance work.

PM Care Fund

Context:

- Prime Minister orders setting up of 551 oxygen plants in hospitals from PM Cares fund
- These plants will be established in identified government hospitals in district headquarters in various States and Union Territories.
- In addition, the liquid medical oxygen (LMO) will serve as a “top up” to the captive oxygen generation.

About PM-Cares

Created	Established on 27 th March 2020
Objective	<ul style="list-style-type: none"> • To help people affected by the Covid 19 Pandemic • To render financial assistance, provide grants of payments of money • To undertake and support relief or assistance of any kind relating to a public health emergency or any other kind of emergency, calamity or distress, either man-made or natural, including the creation or upkeep of healthcare or pharmaceutical facilities
Board Structure	<ul style="list-style-type: none"> • Chairman: Prime Minister • Other Members: Home Minister , Defence Minister and Finance Minister • Prime Minister shall have the power to nominate 3 trustees to the Board of Trustees who shall be the eminent persons in the field of research, science, health, social work, public administration law, and philanthropy.
Financing	<ul style="list-style-type: none"> • It can't receive funds through government budgetary support. • Consists entirely of voluntary contributions from individuals/organizations.
Administration	<ul style="list-style-type: none"> • on an honorary basis by a Joint Secretary (Administration) in the PMO as Secretary to the fund. • assistance on honorary basis by an Officer of the rank of Director/Deputy Secretary (Administration) in the PMO. • The Prime Minister's Office provides such administrative and secretarial support to the Trustees for the management and administration of the Trust
Other Details	<ul style="list-style-type: none"> • Donations to PM CARES Fund qualifies for 80G benefits for 100% exemption under the Income Tax Act, 1961. • Donations to PM CARES Fund also qualifies to be counted as Corporate Social

	Responsibility (CSR) expenditure under the Companies Act, 2013
FCRA (Foreign Contribution Regulating Act) status	<ul style="list-style-type: none"> Got exemption under the FCRA A separate account for receiving foreign donations has been opened. Can accept donations and contributions from individuals and organizations based in foreign countries.
Auditing	<ul style="list-style-type: none"> Independent Auditor no statutory period prescribed for audit of the PM CARES under Income Tax Act. However, audit will be conducted at the end of the Financial Year.

e-VISA

Context

- The **Ministry of Home Affairs (MHA)** has restored **electronic visa (e-visa)** facility for **foreigners** from **156 countries**, who intend to visit India for the purposes of **business, conferences, and for medical reasons**, including in the case of medical attendants.

Introduction

- The e-Visa enables the prospective visitor to apply for an Indian Visa from his/her home country online without visiting the Indian Mission and also pay the visa fee online.
- Once approved, the applicant receives an email authorizing him/her to travel to India and he/she can travel with a print out of this authorisation.
- e-Visa has been sub-divided into 5 categories i.e.
 - e-tourist visa,
 - e-Business visa,
 - e-Medical visa,
 - e-Conference
 - e-Medical Attendant.
- There are **28 designated airports** for E-VISA entry.
- Nodal Ministry:** The **Ministry of Home Affairs** is the nodal ministry that issues visas to foreigners.

Important for prelims

- The facility is **not available for the citizens of Pakistan** and they are expected to apply for regular visas from the Indian High Commission in Islamabad.
- E-visas are **not valid for foreign diplomats** which are dealt separately.

INTERNATIONAL RELATIONS

International Commission of Jurists

Context

- The International Commission of Jurists (ICJ) called on the Centre and the State governments to comply with court orders regarding oxygen supply, hospital beds and medicines for COVID-19, adding that the governments had failed to prepare for the second wave of the pandemic.
- The ICJ noted that India had reported over 2,00,000 cases every day since April 15 and 3,60,960 cases on April 27, the highest in the world.

About ICJ

- The International Commission of Jurists is an international human rights non-governmental organization.
- It is a standing group of 60 eminent jurists—including senior judges, attorneys and academics—who work to develop national and international human rights standards through the law.

- The composition of the Commission aims to reflect the geographical diversity of the world and its many legal systems.
- The Commission is supported by an International Secretariat based in Geneva, Switzerland, and staffed by lawyers drawn from a wide range of jurisdictions and legal traditions.
- The Secretariat and the Commission undertake advocacy and policy work aimed at strengthening the role of lawyers and judges in protecting and promoting human rights and the rule of law.

Supply Chain Resilience Initiative

Context

- Trade ministers of **India, Japan and Australia** formally launched the Supply Chain Resilience Initiative (SCRI) in a virtual trilateral ministerial meeting.

About Supply Chain Resilience Initiative

- The Supply Chain Resilience Initiative aims to create a virtuous cycle of enhancing supply chain resilience with a view to eventually attaining strong, sustainable, balanced and inclusive growth in the Indo-Pacific region.
- In 2019, the cumulative GDP of the three countries was \$9.3 trillion, while cumulative merchandise goods and services trade were \$2.7 trillion and \$900 billion, respectively.
- Possible policy measures may include:
 - supporting the enhanced utilization of digital technology; and
 - supporting trade and investment diversification.
 - Initially, SCRI will focus on sharing best practices on supply chain resilience and holding investment promotion events and buyer-seller matching events to provide opportunities for stakeholders to explore the possibility of diversification of their supply chains.



Boao Forum for Asia (BFA)

Context

- China's President Xi Jinping at the annual Boao Forum said global rules cannot be imposed by one or a few countries and attempts to decouple would not benefit any nation.

About Boao Forum for Asia

- The Boao Forum for Asia initiated by **25 Asian countries and Australia** (increased to 28 in 2006).
- It is a **non-profit organisation** that hosts high-level forums for leaders from government, business and academia in Asia and other continents to share their vision on the most pressing issues in this dynamic region and the world at large.
- BFA is modelled on the **World Economic Forum** held annually in **Davos, Switzerland**.
- The forum, sometimes known as the "Asian Davos", takes its name from the town of Boao, located in China's southern Hainan province, which has been the permanent venue for its annual conference since 2002.

World Press Freedom index

Context

- In the World Press Freedom index, India has retained the 142 of 180 spot, and thus remained as "one of the world's most dangerous countries" for journalists.

About the index

- The World Press Freedom Index 2021 is published by the international journalism not-for-profit body, **Reporters Without Borders (RSF)**.
- The index ranked 180 countries, topped, yet again, by **Norway** followed by **Finland** and **Denmark**, while Eritrea is at the bottom.
- **China is ranked 177**, and is **only above North Korea** at 179 and Turkmenistan at 178.

- In the South Asian neighborhood, Nepal is at 106, Sri Lanka at 127, Myanmar (before the coup) at 140, Pakistan at 145 and Bangladesh at 152.
- **India**
 - It classified **India as “bad” for journalism** and is termed as one of the most dangerous countries for journalists trying to do their jobs properly.
 - India shares the “bad” classification with **Brazil, Mexico and Russia**.
 - The latest report has blamed an environment of intimidation for any critical journalist.
 - The report has also highlighted throttling of freedom of expression on social media, and specifically mentioned that in India the “arbitrary nature of Twitter’s algorithms also resulted in brutal censorship.

EU Climate Deal

Context

- EU reaches major climate deal ahead of Biden climate summit

Details

- The European Union reached a **tentative climate deal** that should make the 27-nation bloc climate-neutral by 2050.
- It’s political commitment is to become the **first climate neutral continent by 2050**.
- The Climate Law sets the EU on a green path for a generation.
- The EU also commits itself on an intermediate target of cutting greenhouse gas emissions by **at least 55 percent by 2030** compared to **1990 levels**.
- The United States, the world's second-biggest polluter after China, is preparing to announce its new target for cutting greenhouse gas emissions by 2030.
- The deal still needs to be officially approved by the member states and the legislature.

About EU

- The European Union (EU) is a political and economic union of **27 member states** that are located primarily in Europe.
- The EU has developed an **internal single market** through a standardised system of laws that apply in all member states in those matters, and only those matters, where members have agreed to act as one.
- Passport controls have been abolished for travel within the **Schengen Area**.
- A **monetary union** was established in **1999**, coming into **full force in 2002**, and is composed of **19 EU member states** which use the **euro currency**.
- The EU and European citizenship were established when the **Maastricht Treaty** came into force in 1993.

EU’s Indo-Pacific strategy

Context

- European Council approves conclusions on EU’s Indo-Pacific strategy

Details

- The Council of the European Union approved conclusions on a European Union strategy for cooperation in the Indo-Pacific to **reinforce its strategic focus, presence and actions in this region**.
- **Aim:** The aim is to contribute to regional stability, security, prosperity and sustainable development.
- **Values:** The renewed EU commitment to the Indo-Pacific will have a **long-term focus** and will be based on upholding **democracy, human rights, the rule of law and respect for international law**.
- The EU will aim to promote effective **rules-based multilateralism**, reiterating its support for ASEAN (Association of South East Asian Nations) centrality, a point also stressed by India.

Need

- Current dynamics in the Indo-Pacific have given rise to intense geopolitical competition adding to increasing tensions on trade and supply chains as well as in technological, political and security areas.
- Human rights are also being challenged.

- These developments increasingly threaten the stability and security of the region and beyond, directly impacting on the EU's interests.

Raisina Dialogue-2021

Context

- Prime Minister delivered a video address at the Inaugural Session of the Raisina Dialogue in virtual format.

Details

- The 6th Edition of the prestigious Raisina Dialogue, jointly organised by the **Ministry of External Affairs** and the **Observer Research Foundation**, will be held virtually from 13-16 April, 2021.
- Theme for the 2021 Edition is "**#ViralWorld: Outbreaks, Outliers and Out of Control**".
- **PM's Stand:**
 - The Prime Minister called upon the global community to **introspect on some pertinent questions** in the present context.
 - He also emphasized that global systems should **adapt themselves**, in order to **address the underlying causes** and **not just the symptoms for keeping humanity** at the centre of our thoughts and action, and creating systems that address the problems of today and the challenges of tomorrow.

About Raisina Dialogue

- It is a multilateral conference held annually in **New Delhi, India**.
- Since its inception in 2016, the conference has emerged as **India's flagship conference on geopolitics and geo-economics**.
- The conference is hosted by the **Observer Research Foundation**, an independent think tank, in collaboration with the **Ministry of External Affairs of India**.
- It also welcomes **major private sector executives**, as well as members of the media and academia.
- It is designed on the lines of **Singapore's Shangri-La Dialogue**.
- The name "Raisina Dialogue" comes from **Raisina Hill, an elevation in New Delhi**, seat of the Government of India, as well as the Presidential Palace of India, Rashtrapati Bhavan

Red Sea

Context

- Iranian ship attacked in Red Sea, as per Tehran vessel was deployed to safeguard shipping in the area. The freighter was a civilian ship, although other sources said it had been used by Iranian commandos as a base for shipping protection and other duties in the area.

About Red Sea

- It is a seawater inlet of the Indian Ocean, lying **between Africa and Asia**.
- Its connection to the ocean is in the south, through the **Bab el Mandeb strait** and the **Gulf of Aden**.
- To its north lie the **Sinai Peninsula**, the **Gulf of Aqaba**, and the **Gulf of Suez** (leading to the Suez Canal).
- It is underlain by the Red Sea Rift, which is **part of the Great Rift Valley**.
- It is the world's northernmost tropical sea, and has been designated a Global 200 eco-region.



BIMSTEC

Context

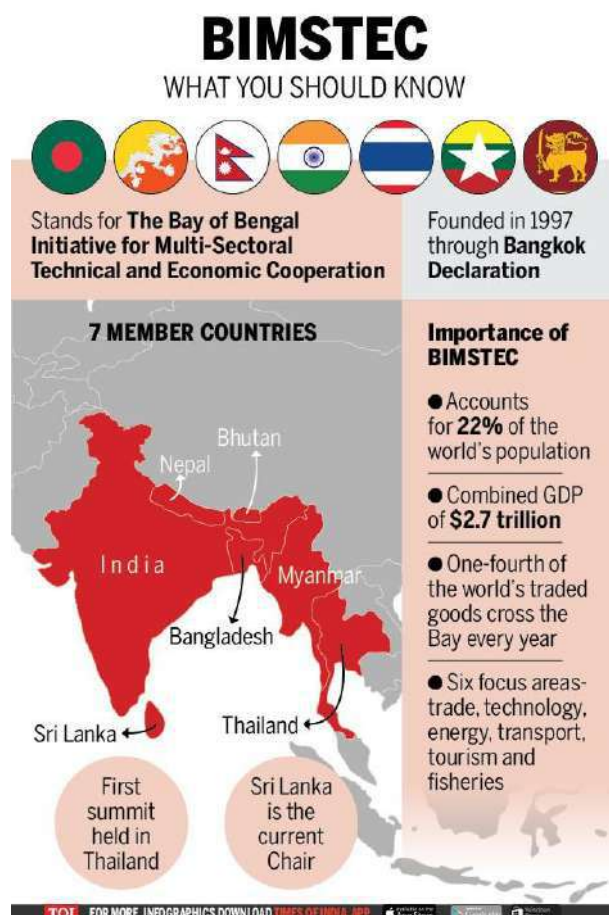
- In an address at a virtual meeting of the regional grouping, external affair minister mentioned that the BIMSTEC convention on cooperation in combating international terrorism, transnational organised crime and illicit drug trafficking has come into force last month.

Other key highlights

- India will ensure cooperation for **building the momentum of regional cooperation** under the framework of BIMSTEC and to make it a stronger, vibrant and result-oriented grouping.
- Member states have finalised the '**BIMSTEC Master Plan for Transport Connectivity**' which is expected to be adopted at the fifth BIMSTEC summit. It would grant better connectivity and integration in the region.

BIMSTEC

- Besides India, BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) comprises **Bangladesh, Myanmar, Sri Lanka, Thailand, Nepal and Bhutan**.
- India has been making concerted efforts to make BIMSTEC a **vibrant forum for regional cooperation** as initiatives under SAARC (South Asian Association for Regional Cooperation) were not moving forward for a variety of reasons.
- A BIMSTEC **free trade agreement is under negotiation**, also referred to as the **mini SAARC**.
- The **BIMSTEC Free Trade Area Framework Agreement (BFTAFA)** has been signed by all member nations to stimulate trade and investment in the parties, and attract outsiders to trade with and invest in the BIMSTEC countries at a higher level.



E9 Countries

Context

- Minister of State for Education, Shri Sanjay Dhotre will attend a consultation meeting of Education Ministers of E9 countries on **E9 initiative: Scaling up digital learning to accelerate progress towards SDG4** on 6th April, 2021.

About the initiative

- The consultation is the first of a **three-phased process** to co-create an initiative on digital learning and skills, targeting marginalised children and youth, especially girls.
- The initiative aims to **accelerate recovery** and **advance the Sustainable Development Goal 4** agenda by driving rapid change in education systems in three of the 2020 Global Education Meeting priorities:
 - support to teachers;
 - investment in skills; and
 - narrowing of the digital divide.
- The consultation will highlight progress and share lessons learned regarding **challenges on digital learning and skills**.

Organisation for the Prohibition of Chemical Weapons (OPCW)

Context

- India's Comptroller and Auditor General (CAG) GC Murmu has been chosen as the external auditor by a prestigious intergovernmental organisation working for the elimination of chemical weapons.

Details

- India was also selected as a member of the Executive Council of the OPCW representing Asia Group for another two-year term during the OPCW Conference of State Parties.
- **Term:** Three-year term starting 2021.
- **Appointment:** An election process at the OPCW conference

About OPCW

- It is an intergovernmental organisation and the implementing body for the **Chemical Weapons Convention**.
- The OPCW, with its 193 member states, has its seat in **The Hague, Netherlands**, and oversees the global endeavour for the **permanent and verifiable elimination** of chemical weapons.
- The organisation promotes and verifies the adherence to the Chemical Weapons Convention, which prohibits the use of chemical weapons and requires their destruction.
- The organisation was awarded the **2013 Nobel Peace Prize** for its extensive efforts to eliminate chemical weapons.

AGRICULTURE

Certification scheme for Aquaculture

Context

- To bolster confidence in India's frozen shrimp produce, the country's biggest seafood export item, Centre has kicked off a new scheme to certify hatcheries and farms that adopt good aquaculture practices.

Aim

- To build confidence in quality, antibiotic-free shrimp products from India for the global market. Certified aquaculture products will help exporters to export their consignments to markets under stringent food safety regulations without the fear of getting rejected.

About Frozen Shrimp sector in India

- Frozen shrimp is India's largest exported seafood item.
- Andhra Pradesh, West Bengal, Odisha, Gujarat and Tamil Nadu are India's major shrimp producing States, and around 95% of the cultured shrimp produce is exported.
- India exported frozen shrimp worth almost \$5 billion in 2019-20.
- Issue: container shortages and incidents of seafood consignments being rejected because of food safety concerns.

About Shaphari Scheme

- The **Marine Products Exports Development Authority (MPEDA)** has developed a certification scheme for aquaculture products called 'Shaphari', a Sanskrit word that means **superior quality of fishery products** suitable for human consumption.
- **National Residue Control Programme** for food safety issues in farm produce and pre-harvest testing system is already in place.
- It will be a **market-based tool for hatcheries** to adopt good aquaculture practices and help produce quality antibiotic-free shrimp products to assure global consumers.
- The Shaphari scheme is based on the **United Nations' Food and Agriculture Organization's technical guidelines** on aquaculture certification and will have two components –
 - certifying hatcheries for the quality of their seeds and,
 - separately, approving shrimp farms that adopt the requisite good practices.
- The certification of hatcheries will help farmers easily identify good quality seed producers.
- Those who successfully **clear multiple audits of their operations** shall be granted a certificate for a period of two years.

Exclusive subsidy policy for Urea

Context

- The Cabinet Committee on Economic Affairs has given its approval for the proposal of the Department of Fertilizers for Urea produced through coal gasification route by **Talcher Fertilizers Limited (TFL)**.

Benefits

- Fertilizer Availability:** The project shall improve availability of fertilizer to farmers thereby boosting development of eastern region.
- Transport Subsidy:** It will save transport subsidies for the supply of urea in eastern part of the country.
- Urea Imports:** It would assist in reducing Urea imports to the tune of 12.7 LMT per annum leading to savings in foreign exchange.
- Economic Boost:** The project will also give a boost to the 'Make in India' initiative and AtmaNirbhar' campaign and would help development of infrastructure like roads, railways, water, etc. providing a major boost to the economy in the eastern part of the country including promoting ancillary industry.
- Availability:** Coal gasification plants are strategically important as coal prices are **non-volatile** and coal is **abundantly available**.
- Reduce Import Bill:** Talcher plant shall also reduce dependence on important Natural Gas for production of urea leading to reduction in LNG import bill.
- Environment Friendly:** The gasification process adopted in the Talcher unit is a Clean Coal Technology giving negligible SO_x, NO_x and free particulate emissions as compared to directly coal fired processes.

About Talcher Fertilizers Ltd. (TFL)

- It is a Joint Venture Company of four PSUs namely Rashtriya Chemicals & Fertilizers (RCF), GAIL (India) Ltd. (GAIL), Coal India Ltd. (CIL) and Fertilizer Corporation of India Ltd. (FCIL) which was incorporated on 13th November, 2015.
- TFL is reviving the erstwhile Talcher plant of Fertilizer Corporation of India Ltd. (FCIL) by setting up a new greenfield Urea Plant with the installed capacity of 12.7 Lakh Metric Ton per annum (LMTPA).

PM-KUSUM

Context

- The first farm-based solar power plant under the Prime Minister's Kisan Urja Suraksha Evum Utthan Mahabhiyan (KUSUM) scheme has come up in **Jaipur district's Kotputli tehsil** with a provision for production of **17 lakh units of electricity every year**.

Details

- The 1 MW project has been established on 3.50 acres of farmland in Kotputli's Bhaloji village.
- The new plant is also the first of the 623 farm-based solar power projects selected by the Rajasthan Renewable Energy Corporation Limited (RRECL) for generating 722 MW capacity in the State under the scheme's first phase.

Components of PM-KUSUM Scheme

- Component-A:**
 - For Setting up of 10,000 MW of **Decentralized Grid Connected Renewable Energy Power Plants** on barren land.
 - Under this component, renewable energy based power plants (REPP) of **capacity 500 kW to 2 MW will be set up**.
 - These power plants can also be **installed on cultivable land** on stilts where crops can also be grown below the solar panels.
- Component-B:**
 - For Installation of 17.50 Lakh **stand-alone solar agriculture pumps**.
 - Individual farmers will be supported to install standalone solar Agriculture pumps of **capacity up to 7.5 HP for replacement of existing diesel** Agriculture pumps.
 - Pumps of capacity higher than 7.5 HP can also be installed.

- **Component-C:**
 - For Solarisation of **10 Lakh Grid Connected Agriculture Pumps**.
 - The farmer will be able to use the generated solar power to meet the irrigation needs and the excess solar power will be sold to DISCOMs at a pre-fixed tariff.

Agriculture Infrastructure Fund

Context

- Agriculture Infrastructure Fund has crossed the Rs. 8000 crore mark after receiving 8,665 applications worth Rs. 8,216 crores.

About the fund

- The Union Cabinet in July 2020 has approved a new pan India **Central Sector Scheme** called Agriculture Infrastructure Fund.
- The scheme shall provide a **medium - long term debt financing facility** for investment in viable projects for **post-harvest management Infrastructure** and community farming assets through **interest subvention and financial support**.
- The duration of the Scheme shall be from **FY2020 to FY2029 (10 years)**.
- **Intended beneficiaries:** Primary Agricultural Credit Societies (PACS), Marketing Cooperative Societies, Farmer Producers Organizations (FPOs), Self Help Group (SHG), Farmers, Joint Liability Groups (JLG), Multipurpose Cooperative Societies, Agri-entrepreneurs, Startups, Aggregation Infrastructure Providers and Central/State agency or Local Body sponsored Public Private Partnership Project.

Benefit of the scheme

- **Interest Subvention:** All loans under this financing facility will have interest subvention of 3% per annum up to a limit of Rs. 2 crore.
- **Credit Guarantee:** Further, credit guarantee coverage will be available for eligible borrowers from this financing facility under Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) scheme for a loan up to Rs. 2 crore.
- **Moratorium Period:** Moratorium for repayment under this financing facility may vary subject to minimum of 6 months and maximum of 2 years.

ECONOMY

Emergency Credit Line Guarantee Scheme (ECLGS) 3.0

Context

- Government has extended the scope of Emergency Credit Line Guarantee Scheme (ECLGS) through introduction of ECLGS 3.0 to cover business enterprises in **Hospitality, Travel & Tourism, Leisure & Sporting sectors**.

ECLGS 3.0

- It would involve extension of **credit of up to 40% of total credit** outstanding across all lending institutions as on 29.02.2020.
- The tenor of loans granted under ECLGS 3.0 shall be **6 years** including a moratorium period of 2 years.
- Validity of ECLGS i.e. ECLGS 1.0, ECLGS 2.0 & ECLGS 3.0 have been **extended upto 30.06.2021** or till guarantees for an **amount of Rs. 3 lakh crore** are issued.
- The modifications will enable **availability of additional funding facilities** to the eligible beneficiaries will go a long way in contributing to economic revival, protecting jobs, and creating a conducive environment for employment generation.

ECGLS

- It was introduced by the government to **mitigate the economic distress** faced by **micro, small and medium enterprises (MSMEs)** because of the COVID-19 pandemic by providing them additional funding of **up to Rs 3 lakh crore** in the form of a fully guaranteed emergency credit.

Ponzi scheme

Context

- Bernie Madoff, the Wall Street financier who was sentenced to 150 years after being convicted for what came to be known as the largest and most devastating Ponzi scheme in financial history, died in a prison hospital in the US.

What is the Ponzi scheme?

- It is a fraudulent investing scam, which generates returns for earlier investors with money taken from later investors.
- This is similar to a pyramid scheme in that both are based on using new investors' funds to pay the earlier backers.

Unregulated Deposit Scheme Act, 2018

- Aim:**
 - It is aimed at tackling the **menace of illicit deposit taking activities** in the country. Companies/ institutions running such schemes exploit existing regulatory gaps and lack of strict administrative measures to dupe poor and gullible people of their hard-earned savings.
 - It aims to provide a comprehensive legislation to tackle illicit deposit schemes by completely prohibiting such activities.
- Regulators:**
 - Nine regulators including the **RBI, SEBI, the Ministry of Corporate Affairs, and the State governments** regulate financial activities.
 - All deposit-taking schemes are required to be **registered with the relevant regulator**, failing which the "Deposit Takers" will be considered "unregulated" and hence be banned.
 - "Deposit Takers" include all possible entities (including individuals) receiving or soliciting deposits, except specific entities such as those incorporated by legislation.
- Types of Offence:**
 - It creates three different types of offences, namely, running of Unregulated Deposit Schemes, fraudulent default in Regulated Deposit Schemes, and wrongful inducement in relation to Unregulated Deposit Schemes.
 - The Bill also approves creating **designated courts** to tackle such cases.
 - The Bill enables creation of an **online central database**, for collection and sharing of information on deposit taking activities in the country.

Wholesale Price Index

Context

- Wholesale-level inflation measured by the WPI or the wholesale price index shot up to 7.39 per cent in March on a year-on-year basis.

Details

- This is the highest wholesale inflation rate since October 2012.
- It was driven largely by higher prices of crude oil and a surge in price levels of food items such as pulses and fruits.
- The surge in March was also aided by a low base in the corresponding month of 2020.

About WPI

- A wholesale price index (WPI) measures and tracks the **changes in the price of goods** before they reach consumers: goods that are sold in bulk and traded between entities or businesses (rather than consumers).
- Wholesale price indexes (WPIs) are one indicator of a country's level of inflation.

The surge and its relevance

- Main reason is WPI has a higher weight of manufactured goods and the CPI has a greater constitution of food items.
- Higher print of both indices portends an economic phenomenon of too much money chasing too few goods and services.

- There are concerns that the higher inflation on the wholesale side could **eventually spill over to the retail level** in the following months, especially if the new lockdowns and restrictions hit supply chains.
- Although WPI numbers are **not the RBI's main metric** for the purpose of setting monetary policy, the sharp spike in March could **dissuade the Monetary Policy Committee from looking at rate cuts**.

National Startup Advisory Council

Context

- Minister of Railways, Commerce & Industry, Consumer Affairs and Food & Public chaired the first meeting of National Startup Advisory Council (NSAC).

About NSAC

- Department for Promotion of Industry and Internal Trade (DPIIT) had



constituted the National Startup Advisory Council to advise the Government on measures needed to build a strong ecosystem for nurturing innovation and startups in the country to drive sustainable economic growth and generate large scale employment opportunities.

- Besides the ex-officio members, the council has a **number of non-official members**, representing various stakeholders such as founders of successful startups, veterans who have grown and scaled companies in India, persons capable of representing interest of investors into startups, persons capable of representing interests of incubators and accelerators, representatives of associations of stakeholders of startups and representatives of industry associations.

DeenDayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)

Context

- Alumni meets are organized across the country under Deen Dayal Upadhyaya Kaushalya Yojana (DDU-GKY), commemorating 75 years of Independence.

About Deen Dayal Upadhyaya Grameen Kaushalya Yojana

- It aims to skill rural youth who are poor and provide them with jobs having regular monthly wages or above the minimum
- It is one of the cluster of initiatives of the Ministry of Rural Development, Government of India that seeks to promote rural livelihoods.
- It is a part of the National Rural Livelihood Mission (NRLM) - the Mission for poverty reduction called Aajeevika.
- The scheme will benefit more than 55 million poor rural youth who are ready to be skilled by providing sustainable employment.
- This scheme derived importance from its potential to reduce poverty. It is also designed to be a major contributor to the Prime Minister's 'Make in India' campaign.

Mission of DDU-GKY

- To **reduce poverty** by enabling poor households to access gainful and sustainable employment through employment that provides regular wages.

Approach of DDU-GKY

- Shift in emphasis - from training to career progression
- Enable poor and marginalized to access benefits from growth
- Ease the pain of migration when it is inevitable
- Proactive approach to building partnerships
- Monitoring of inputs and outputs, where main focus is on Placement i.e. output

Currency chest

Context

- The theft to the tune of Rs 4.04 crore by a private security guard from the currency chest of Axis Bank in Chandigarh's Sector 34 has put the affairs of currency chests in the spotlight.

What is a currency chest? Which authority monitors it?

- Currency chest is a place where the Reserve Bank of India (RBI) stocks the money meant for banks and ATMs.
- These chests are usually situated on the premises of different banks but administered by the RBI.
- Representatives of the RBI inspect currency chests time-to-time, and update their senior officers about it.
- The money present in the currency chest belongs to the RBI and the money, kept in the strong room outside the currency chest belongs to the bank.
- In the case of Axis Bank, Sector 34, the stolen amount of Rs 4.04 crore was the property of the RBI.

How is the loss recovered in case of a crime resulting in loss of cash?

- As per the set guidelines, the bank, in which the currency chest is situated is liable to fulfill the loss of the currency chest.
- In the present case, Axis Bank will have to fulfill the loss from its account. There are certain categories of the loss.
- But in the cases of thefts, robberies and fraud from the currency chests situated within the bank premises, the bank is considered to be responsible.
- Regarding any crime, the banks concerned are also bound to submit a Fraud Monitoring Report (FMR) to the RBI.

e-SANTA

Context

- Union Commerce and Industry Minister virtually inaugurated e-SANTA, an electronic marketplace providing a platform to connect aqua farmers and the buyers.

About e-SANTA

- It will enable the farmers to get a better price and the exporters to directly purchase quality products from the farmers enhancing traceability, a key factor in international trade.
- The term e-SANTA was coined for the web portal, meaning Electronic Solution for Augmenting NaCSA farmers' Trade in Aquaculture.
- National Centre for Sustainable Aquaculture (NaCSA)** is an extension arm of **Marine Products Export Development Authority (MPEDA)**, Govt. of India, Ministry of Commerce & Industry.
- It will change the traditional way of carrying out business from a word of mouth basis to become more formalised & legally binding.
- e-SANTA will RAISE the lives & income of farmers by:
 - Reducing Risk
 - Awareness of Products & Markets
 - Increase in Income
 - Shielding Against Wrong Practice
 - Ease of Processes
 - Other benefits:
 - change the life standards of our fishermen
 - bring in substantive improvements in their lives
 - also enhance India's reputation in the global trade.
- e-SANTA will act as a **Digital Bridge to end the market divide** and will act as an **alternative marketing tool** between farmers & buyers by eliminating middlemen.
- The Platform is **available in many languages**, which will help the local population.
- It is a **completely paperless** and **end-to-end electronic trade platform** between Farmers and exporters.

Challenges in traditional aqua farming

- Farmers were facing monopoly and exploitation
- Exporters were facing inconsistency and quality gaps in the products purchased

- Traceability is a big issue in international trade.

Central Electricity Regulatory Commission

Context

- The REC (renewable energy certificate) trading session which was scheduled on 31 March'21 did not take place due to the stay order from the APTEL (Appellate Tribunal For Electricity) in response to the petitions filed by a few Renewable Energy Associations against the CERC (Central Electricity Regulatory Commission) regarding revision in the floor and forbearance prices of REC.

Result

- Average spot power price rose by 65% to ₹4.06 per unit in March compared to the year earlier month at the Indian Energy Exchange (IEX) mainly due to increase in demand on account of rise in temperature and revival of economic activities.

About CERC

- Central Electricity Regulatory Commission (CERC), a key regulator of power sector in India, is a statutory body functioning with quasi-judicial status under **sec - 76 of the Electricity Act 2003**.
- CERC was initially constituted on 24 July 1998 under the **Ministry of Power's Electricity Regulatory Commissions Act, 1998** for rationalization of electricity tariffs, transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, and for matters connected to Electricity Tariff regulation.
- CERC was instituted primarily to **regulate the tariff of Power Generating companies** owned or controlled by the government of India, and any other generating company which has a composite scheme for power generation and interstate transmission of energy, including tariffs of generating companies.
- The Central government of India moved forward to enact the **Electricity Regulatory Commission Act of 1998**, which mandated the creation of the Central Electricity Regulation Commission with the charge of setting the tariff of centrally owned or controlled generation companies.

Pre-pack: Insolvency resolution option for MSMEs

Context

- The central government has promulgated an ordinance allowing the use of pre-packs as an insolvency resolution mechanism for Micro, Small and Medium Enterprises (MSMEs) with defaults **up to Rs 1 crore**, under the Insolvency and Bankruptcy Code.
- The government had last year also **increased the minimum default** threshold for insolvency proceedings from **Rs 1 lakh to Rs 1 crore**.

What are pre-packs?

- A pre-pack is the resolution of the **debt of a distressed company** through an agreement between **secured creditors and investors** instead of a public bidding process.
- This system of insolvency proceedings has become an **increasingly popular mechanism for insolvency resolution** in the UK and Europe over the past decade.
- Under the pre-pack system, **financial creditors will agree to terms** with a potential investor and seek approval of the resolution plan from the **National Company Law Tribunal (NCLT)**.
- The approval of a **minimum of 66 percent of financial creditors** that are unrelated to the corporate debtor would be required before a resolution plan is submitted to the NCLT.
- Further NCLTs are also required to **either accept or reject any application** for a pre-pack insolvency proceeding before considering a petition for a CIRP.

Benefits of pre-packs over the Corporate Insolvency Resolution Process (CIRP)

- One of the key criticisms of the CIRP has been the time taken for resolution. One of the key reasons behind delays in the CIRPs are prolonged litigations by erstwhile promoters and potential bidders.
- The pre-pack in contrast is limited to a maximum of 120 days with only 90 days available to the stakeholders to bring the resolution plan to the NCLT.

- Another key difference between pre-packs and CIRP is that the existing management retains control in the case of pre-packs while a resolution professional takes control of the debtor as a representative of financial creditors in the case of CIRP.

Government e-marketplace (GeM) portal

Context

- To ensure that this digital e-commerce portal is appropriately utilised by all the Ministries/Departments, it has been decided that a reflection of the work done through GeM by the Officer Reported Upon (ORU) shall be made in the Annual Performance Appraisal Report (APAR) of all India service officers working in all the Ministries/Departments of the Government of India.

Details

- There are three all India services – Indian Administrative Service (IAS), Indian Police Service (IPS) and Indian Forest Service (IFoS).
- The ORUs, who are handling procurement from GeM portal in their Ministry/Department, while recording self-appraisal in APAR form, shall specify the total Budget allocated for procurement and indicate total procurement through the portal made by him/her during the period of report and steps taken for promotion of GeM among others.
- The Reporting and Reviewing officers shall take into account the performance of ORU in accordance with the extant instructions in force during the period of report.

GeM

- Government e Marketplace (GeM) is an **online platform for public procurement** in India.
- The initiative was launched on August 9, **2016** by the **Ministry of Commerce and Industry**.
- The platform is owned by GeM SPV (Special Purpose Vehicle) which is a **100 per cent Government-owned, non-profit company**.
- GeM is a **contactless, paperless and cashless online marketplace** that replaced the Directorate General of Supplies and Disposals (DGS&D) in 2016.
- The portal has transformed public procurement in India by driving its three pillars, namely, inclusion, usability and transparency and efficiency and cost savings.

Index of Industrial Production (IIP)

Context

- The Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade released Index of Eight Core Industries for the Month of March, 2021.
- The combined Index of Eight Core Industries stood at 143.1 in March, 2021, which increased by 6.8 (provisional) per cent as compared to the Index of March, 2020.
- The Eight Core Industries comprise 40.27 per cent of the weight of items included in the Index of Industrial Production (IIP).

What is the IIP?

- The Index of Industrial Production (IIP) maps the change in the volume of production in Indian industries.
- It chooses a basket of industrial products – ranging from the **manufacturing sector to mining to energy**, creates an index by giving different weight to each sector and then tracks the production every month.
- Finally, the index value is compared to the value it had in the **same month last year to figure out the economy's industrial health**.
- The whole industrial economy is divided into three sectors; the first is **manufacturing** with a weight of 77.6 per cent in the index, the second is **mining** with a weight of 14.4 percent and third is **electricity** with a weight of 8 per cent.
- The Index of Industrial Production (IIP) is an index which **shows the growth rates in different industry groups** of the economy in a stipulated period of time.
- The IIP index is computed and published by the **Central Statistical Organisation (CSO)** on a monthly basis.

Asian Development outlook Report

Context

- The Asian Development Bank (ADB) has raised its forecast for **India's growth in 2021-22 to 11%, from 8% earlier**, even as it warned that failure to control the resurgence of COVID-19 cases including April's exponential jump poses a considerable downside risk to the recovery.

Detail

- The ADB cited this year's '**more targeted' containment measures** compared with last year's 'large-scale' national lockdown and said these would **prove 'less costly' to the economy**, which had seen a strong rebound in recent months' economic indicators after last year's 'big recession'.
- India's largest export market, will support the **revival Asian Development Outlook report**, projecting growth to **moderate to 7% in 2022-23**, after a 11% expansion this year.
- Government capex and accommodative financial policies, along with the **vaccine roll-out programme this year**, would also help.
- Another risk is a further tightening of global financial conditions, which would **apply pressure on India's market interest rates** and therefore **affect economic normalization**.
- The lender sees India's average inflation rate slowing to 5.2% this year from 6.2% last fiscal, and reverting to 4.8% (recorded in 2019-20), over the succeeding 12 months.

About ADB

- The Asian Development Bank (ADB) is a regional development bank established on 19 December **1966**, which is headquartered in **Philippines**.
- The bank admits the members of the **United Nations Economic and Social Commission for Asia and the Pacific** and **non-regional developed countries**.
- ADB now has 68 members.
- The ADB was modeled closely on the **World Bank**, and has a similar **weighted voting system** where votes are distributed in proportion with **members' capital subscriptions**.
- ADB releases an annual report that summarizes its operations, budget and other materials for review by the public
- ADB is an official **United Nations Observer**.
- Japan** and the **United States** each hold the largest proportion of shares at 15.571%. China holds 6.429%, India holds 6.317%, and Australia holds 5.773%

PM Cares Fund

Context

- Prime Minister orders setting up of 551 oxygen plants in hospitals from PM Cares fund.

Details

- These plants will be established in identified government hospitals in district headquarters in various States and Union Territories.
- An in-house captive oxygen generation facility will address the day-to-day medical oxygen needs of these hospitals and the district.
- In addition, the liquid medical oxygen (LMO) will serve as a "top up" to the captive oxygen generation.

PM CARES Fund

- PM CARES Fund is a public charitable trust.
- It has been set up keeping in mind the need for having a dedicated fund with the primary objective of dealing with any kind of emergency or distress situation, like posed by the COVID-19 pandemic, and to provide relief to the affected.
- Trustees of the PM CARES Fund:**
- The Prime Minister is **Chairperson** (ex-officio) of the PM CARES Fund.
- Minister of **Defence**, Minister of **Home Affairs** and Minister of **Finance**, Government of **India** are ex-officio Trustees of the Fund.

- **Legal framework of PM CARES Fund:**
 - PM CARES Fund has been registered as a Public Charitable Trust.
 - The trust deed of PM CARES Fund has been registered under the **Registration Act, 1908**
- **Foreign Donation:**
 - PM CARES Fund has received **exemption** from operation of all provisions of the **Foreign Contribution (Regulation) Act, 2010**.
 - Foreign Donation is accepted from individuals and organizations based in Foreign countries **through Foreign Credit / Debit Cards** and also through Wire Transfer/SWIFT following the link on the Home page of PM CARES Fund portal.

AIM-PRIME

Context

- Atal Innovation Mission (AIM), NITI Aayog launched AIM-PRIME (Program for Researchers on Innovations, Market-Readiness & Entrepreneurship), an initiative to promote and support science-based deep-tech startups & ventures across India.

About AIM-PRIME

- AIM has joined hands with **Bill & Melinda Gates Foundation (BMGF)** to launch this nationwide program, which will be implemented by **Venture Center** - a non-profit technology business incubator.
- The first cohort of the program is **open to technology developers** (early-stage deep tech start-ups, and scientists/ engineers/ clinicians) with strong **science-based deep tech business ideas**.
- The program is also **open to CEOs and Senior incubation managers** of AIM Funded Atal Incubation Centers that are supporting deep tech entrepreneurs.
- The benefits of this program are aimed at addressing specific issues through training and guidance over a period of 12 months.
- Candidates selected for the program will get access to in-depth learning via a comprehensive lecture series, live team projects, exercises, and project-specific mentoring.

Currency watchlist

Context

- Commerce Secretary questioned the rationale behind the U.S. government's decision to put India in the watchlist for currency manipulators and consider it as an intrusion into the policy space needed by central banks around the world to meet their mandates.

Details

- The U.S. Treasury Department had recently retained India in a watchlist for currency manipulators, citing higher dollar purchases (close to 5% of the gross domestic product) by the Reserve Bank of India (RBI).
- Another trigger for the inclusion in the currency watchlist is a trade surplus of \$20 billion or more.
- India's trade surplus with the U.S. grew by about \$5 billion to \$23 billion in 2020-21 from around \$18 billion in the previous fiscal year.

Currency manipulator

- Currency manipulator is a designation applied by United States government authorities, such as the **United States Department of the Treasury**, to countries that engage in what is called unfair currency practices that give them a trade advantage.
- The US Treasury Department uses three criteria to assess whether an economy has manipulated its currency or not:
 - Bilateral trade surplus with the US of more than \$20 billion
 - Current account surplus of at least 3 percent of Gross Domestic Product (GDP)
 - Net purchases of foreign currency of 2 percent of GDP over 12 months.
- A designated currency manipulator can be excluded from U.S. government procurement contracts.

Startup India Seed Fund Scheme

Context

- The Startup India Seed Fund Scheme launched. 3,600 startups are expected to benefit from the scheme as this scheme will:
 - Secure seed funding
 - Inspire innovation
 - Support transformative ideas
 - Facilitate implementation, and
 - Start startup revolution

About Startup India Seed Fund Scheme (SISFS)

- **Aim:** It aims to provide financial assistance to startups for proof of concept, prototype development, product trials, market entry, and commercialization.
- **Fund:** 945 Crore corpus will be divided over the next 4 years for providing seed funding to eligible startups through eligible incubators across India.
- **Focus:**
 - This scheme will create a robust startup ecosystem, particularly in Tier 2 and Tier 3 towns of India, which are often deprived of adequate funding.
 - It would especially encourage innovators from rural areas to come forward and benefit from this scheme.
- Independent & ambitious thinking in the Startup ecosystem will encourage entrepreneurship and create a culture that will recognise innovation.
- With the motto of Connect, Collaborate & Catalyse, the Government has introduced initiatives like Startup Innovation Challenges, National Startup Awards, Ranking of States, SCO Startup Forum, Prarambh etc.
- The online portal created by DPIIT, for the scheme, will allow incubators to apply for funds under it.
- An Experts Advisory Committee (EAC) has been **created by DPIIT** to execute and monitor the Startup India Seed Fund Scheme.
- **Grants of upto Rs 5 Crores** shall be provided to the eligible incubators selected by the EAC.
- The selected incubators shall provide grants of up to Rs 20 lakhs for validation of Proof of Concept, or prototype development, or product trials to startups.
- Investments of up to Rs 50 lakhs shall be provided to the startups for market entry, commercialization, or scaling up through convertible debentures or debt-linked instruments.

SCIENCE & TECHNOLOGY

World's Oldest Water

Context

- Dr Barbara Sherwood Lollar of the University of Toronto has extracted from a Canadian mine water that is 1.6 billion years old.
- It was present 2.4 km below the Earth's surface.

What scientists found in the water?

- Scientists found that **chemolithotrophic microbes**– bacteria that can thrive in the most extreme surroundings – had been able to survive in the subterranean liquid.
- The microbes had been feeding on nitrogen and sulphate.
- The chemistry that supported them bore resemblance to ocean beds that are known to support similar such extreme life forms.

Significance of Discovery

- The discovery of the water can have greater ramifications on what we know about the origin and evolution of our planet, the nature of water and life, as well as the possibility of finding life on Mars.

Hypothesis

- Being a continental shield, which suffers the least from plate tectonic activity, the Canadian Shield is the closest analogue on Earth to the subsurface of Mars.
- Scientists argue that if life-supporting water can be found 2.4 km below the Earth, it may be possible that the same could be true in the case of the Red Planet.
- This hypothesis provides an impetus for missions like Perseverance, which are looking for signs of present or past life on Mars.

Apollo 11

Context

- NASA astronaut Michael Collins, who piloted the historic mission of Apollo 11 spacecraft Columbia in 1969, passed away.

About

- Apollo 11 was the spaceflight that **first landed humans on the Moon**.
- Commander Neil Armstrong and lunar module pilot Buzz Aldrin formed the American crew that landed the Apollo Lunar Module Eagle on July 20, 1969.
- Apollo 11 was launched by a **Saturn V rocket** and it was the fifth crewed mission of NASA's Apollo program.

Zhurong

Context

- China has announced the name of its first Mars rover as Zhurong.

About

- The Tianwen-1 probe, which arrived in Mars orbit in February 2020, is carrying China's first Mars rover-Zhurong.

Tianwen-1

- Tianwen-1 is China's first independent interplanetary mission. The aim is to send a robotic spacecraft to Mars.
- The probe, a combination orbiter, lander and rover, launched from Earth aboard a **Long March 5 rocket** on July 23, 2020.
- After its arrival the lander will detach from the orbiter, with the rover tucked inside, and will descend to **Utopia Planitia** - landing site.

Scientific Objective

- The scientific objectives of the mission relate to the geology of Mars, the current and past presence of water, the internal structure of the planet, surface soil characteristics and water-ice distribution with its own Subsurface Exploration Radar, identification of minerals and rock types on the surface, as well as characterization of the space environment and atmosphere of Mars.

Significance

- If the rover landing and deployment are successful, China would become only the second country to accomplish this feat, after the United States.
- It would also become the third country to achieve a successful soft landing on Mars, after the Soviet Union and the United States.

Single Crystal Blades

Context

- The Defence Research and Development Organisation (DRDO) has developed single crystal blades that are used in helicopter engines.

Details

- Helicopters used in strategic and defence applications need compact and powerful aero engines for operating in extreme conditions.

- To achieve this, state-of-the-art single crystal blades with complex shape and geometry, manufactured out of **nickel-based super-alloys** capable of withstanding high temperatures (1500°C) of operation are used.
- Very few countries in the world such as the US, the UK, France and Russia have the ability to design and manufacture such components.

Harlequin Ichthyosis

Context

- Odisha reported its first-ever case of a baby born with Harlequin Ichthyosis.

About

- Harlequin-type ichthyosis is a **genetic disorder that results in thickened skin** over nearly the entire body at birth.
- The skin forms large, **diamond/trapezoid/rectangle-shaped plates** that are separated by deep cracks.
- These affect the **shape of the eyelids, nose, mouth, and ears** and limit movement of the arms and legs.
- Restricted movement of the chest can lead to breathing difficulties.
- These plates fall off over several weeks.
- Other complications can include premature birth, infection, problems with body temperature, and dehydration.
- The condition is the most severe form of ichthyosis, a group of genetic disorders characterized by scaly skin.
- Harlequin-type ichthyosis is caused by mutations in the ABCA12 gene.
- This gene codes for a **protein necessary for transporting lipids out of cells in the outermost layer of skin**.
- The disorder is autosomal recessive and inherited from parents who are carriers.
- There is no cure for the condition.
- Early in life, constant supportive care is typically required.
- Treatments may include moisturizing cream, antibiotics, etretinate or retinoids.
- Around half of those affected die within the first few months; however, retinoid treatment can increase chances of survival.
- Children who survive the first year of life often have long-term problems such as red skin, joint contractures and delayed growth.
- The condition affects around 1 in 300,000 births.



To read about Mutation in detail, Visit : <https://www.iasgyan.in/blogs/bengal-strain-all-about-mutation>

International Space Station (ISS)

Context

- Russia has announced that it would be withdrawing from the International Space Station in 2025, and build and manage its own floating laboratory that will be launched into orbit by 2030.

Space Station

- A space station is essentially a large spacecraft that remains in low-earth orbit for extended periods of time.
- It is like a large laboratory in space, and allows astronauts to come aboard and stay for weeks or months to carry out experiments in microgravity.
- The **Mir space station of the former Soviet Union**, and later operated by Russia, was functional from 1986 to 2001.

ISS

- The ISS has been in space since 1998. The International Space Station (ISS) is a modular space **station (habitable artificial satellite)** in **low Earth orbit**.
- It has been known for the exemplary cooperation between the five participating space agencies that have been running it: **NASA (United States), Roscosmos (Russia), JAXA (Japan), ESA (Europe), and CSA (Canada)**.

- The station serves as a microgravity and space environment research laboratory in which scientific research is conducted in astrobiology, astronomy, meteorology, physics, and other fields.
- The ISS is the ninth space station to be inhabited by crews, following the Soviet and later Russian **Salyut, Almaz, and Mir stations and the U.S. Skylab.**
- It is the **largest artificial object in space and the largest satellite in low Earth orbit**, regularly visible to the naked eye from Earth's surface.
- It maintains an orbit with an average altitude of **400 kilometres.**
- The ISS **circles the Earth in roughly 93 minutes, completing 15.5 orbits per day.**

RESPOND Programme

Context

- The Indian Space Research Organisation (ISRO) has announced that it will support eight joint research projects mooted by the Space Technology Cell (STC), Indian Institute of Technology (IIT) Delhi.
- ISRO will support the projects under its RESPOND programme with varying duration of one to three years.

About

- RESPOND is a **sponsored research program of Indian Space Research Organization started in 1970s.**
- The main objectives of the RESPOND Programme is **to establish strong links with premiere academic institutions in the country to carry out research and developmental projects** which are of relevance to Space and derive useful outputs of such R&D to support ISRO programmes.
- RESPOND programme **aims to enhance academic base, generate quality human resources and infrastructure** at the academic institutes to support the Indian Space programme.
- Under RESPOND, projects in the advanced areas of relevance to Space programme are encouraged to be taken up by premiere universities/academic institutions.
- ISRO helps these institutions to establish the necessary technical facilities and also provide fellowships to researchers to work on cutting edge research topics.
- The research studies conducted by the Academia are expected to be directed towards some of the future Space activities, which would be a good supplement to various missions undertaken by ISRO.
- The research proposals received from academia for consideration under RESPOND are accepted for taking up research along with appropriate technical and financial support, only after thorough review of proposals.

TB

Context

- Recently, Union Minister for Health and Family Welfare addressed the 5th Global Forum on TB Vaccine.

About

- The Global Forum on TB Vaccines brings together stakeholders from across the spectrum of TB vaccine research and development to share data, concepts, and new approaches to tuberculosis vaccine R&D.

TB

- **Cause:** TB is an infectious disease usually caused by **Mycobacterium tuberculosis (MTB) bacteria.** Tuberculosis is sometimes called **Koch's disease.**
- **Effect:** Tuberculosis **generally affects the lungs**, but it can affect multiple vital organs. It is described as a multi systemic infectious disease.
- **Symptoms:** Typical symptoms of active TB are a chronic cough with **blood-containing mucus, fever, night sweats, and weight loss.**
- **Spread:** Tuberculosis is **spread from one person to the next through the air when people who have active TB in their lungs cough, spit, speak, or sneeze.**
- People with **latent TB do not spread the disease.**
- **Risk:** Active infection **occurs more often in people with HIV/AIDS and in those who smoke.**
- **Prevention:** Vaccination with the bacillus **Calmette-Guérin (BCG) vaccine.**

- **Treatment:** Treatment requires the use of multiple antibiotics over a long period of time.
- **Resistance:** Antibiotic resistance is a growing problem with increasing rates of multiple drug-resistant tuberculosis (MDR-TB).

Durokea Series

Context

- Union minister launched Durokea Series. It is developed by IIT Hyderabad.

About

- It is a hygiene product developed to fight COVID-19 virus spreading.
- It is aligned with the vision of self-reliance/Atmanirbhar Bharat.
- Starting at a rate of Rs 189, it is touted to kill 99.99% of germs.
- It leaves behind the long-lasting protective nanoscale coating up to 35 days till next wash.
- It kills germs within 60 seconds and extends protection on a prolonged period.

Polymer and H₂S

Context

- Scientists have developed an electronic nose with biodegradable polymer and monomer that can detect hydrogen sulphide (H₂S).

H₂S

- Hydrogen sulfide appears as a **colorless gas having a strong odor of rotten eggs**.
- The Gas is very toxic by inhalation poisonous, corrosive, and flammable.
- Source: H₂S is the primary gas produced from the microbial breakdown of organic matter in the absence of oxygen, and this necessitates easy detection of its emission from sewers and swamps.

Biodegradable polymers

- Biodegradable polymers are a special class of polymer that breaks down after its intended purpose by bacterial decomposition process to result in natural byproducts such as gases (CO₂, N₂), water, biomass, and inorganic salts. These polymers are found both naturally and synthetically made, and largely consist of ester, amide, and ether functional groups.

Non-Biodegradable Polymers

- Non-biodegradable polymers that do not break down to a natural, environmentally safe condition over time by biological processes.
- Most plastics are non-biodegradable mainly because plastic is widely used because of its low cost, versatility and durability.
- They consist of long chains of carbon and hydrogen atoms.
- These molecules form an inter-atomic type of bonding and is adamant meaning it is tough for microbes to break the bonds and digest them. Thus a long period is required to decompose them.
- **Examples:** Linear high-density polyethylene (HDPE), Branched low-density polyethylene (LDPE) and Ultra-high molecular weight polyethylene (UHMWPE)

Oxo-biodegradable

- They are based on conventional plastics, like polyethylene (PE), polypropylene (PP), polystyrene (PS) and polyethylene terephthalate (PET).
- But to these additives, that should cause the plastic to degrade by a process initiated by oxygen and accelerated by light and/or heat, are added.
- The additives are typically metal salts of carboxylic acids or dithiocarbamates based on cobalt (Co), iron (Fe), manganese (Mn) or nickel (Ni).

Vaccine Awareness Program

In News

- **Department of Science & Technology (DST)** launched a multipronged nationwide mass awareness campaign with information packages to bust myths about COVID 19 vaccination.
- It is in 11 languages, including English and Hindi, to make the immunization programme successful.
- **Organized by:** The COVID-19 vaccination awareness campaign organized by **Indian National Young Academy of Sciences (INYNAS)** will be carried out through **COVACNEWS android-based mobile app** made by INYNAS for ensuring information at the fingertips.
- A pan-India info-graphic video and audio competition with motivation to transform information into better readable and effective formats is also being organized.
- Along with this **GYAN TEEKA webinar series** is dedicated to increase awareness about vaccines through eminent speakers and open statement on COVID-19 vaccination.

INYNAS

- Indian National Young Academy of Sciences (INYNAS) is the first and only recognized young scientist academy of India.
- INYNAS was founded by the INSA council in 2014 with a vision to promote Science education and networking among young scientists at National as well as International level.

Elastocopter

Context

- Researchers at IIT Hyderabad have created a working prototype of a **flexible drone called Elastocopter**.

About

- It is an unmanned aerial vehicle (UAV) with adjustable arms.
- It is capable of changing its shape to fit the size of a package that has to be lifted.

Features

- This prototype is a rectangular-shaped drone with four propellers and a flexible chassis (that expands and collapses) that does not cause mid-air turbulence despite its adjustments.
- There is zero prop wash interference with the **payload no matter its size**.
- The Elastocopter is not only able to move in any direction and be able to hold packages of any size, but it is also able to expand and contract to hold the payload and ensure stability while flying.



GigaMesh

In News

- Astrome, a women-led startup, has developed an innovative wireless product that gives fibre-like bandwidth at a fraction of cost of fibre to help telecom operators deliver reliable low-cost internet services to suburban and rural areas.
- The wireless product called GigaMesh could enable telecom operators deploy quality, high-speed rural telecom infrastructure at 5 times lower cost.
- Giga Mesh can solve much of the last mile connectivity telecom needs of our country.

"Double Mutant" Variant

Context

- A new "double mutant" variant of the coronavirus called B.1.617. has been detected from samples collected in India.

Double mutant- Misnomer

- B.1.617 has two **key** mutations that have cropped up in two other infamous strains.
- Scientifically, the term "double mutant" makes no sense.
- SARS-CoV-2 mutates all the time. So there are many double mutants all over the place.

- **Key mutations:** E484Q and L452R
- Such mutations confer immune escape and increased infectivity.
- E484K is described to be an “**escape mutation**” because it helps the virus slip past the body’s immune defences. The recent Bengal Strain has been formed by E484K mutation.
- B.1.617 is more contagious than previous strains of the virus.

Read more about Bengal Strain and Mutation at <https://www.iasgyan.in/blogs/bengal-strain-all-about-mutation>

DSIR-PRISM scheme

Context

- Union Minister for **Science & Technology, Earth Sciences and Health & Family Welfare**, virtually inaugurated Alignment and Awareness Event for Publicity of the Department of Scientific and Industrial Research - Promoting Innovations in Individuals, Startups and MSMEs (DSIR-PRISM) scheme.

PRISM

- **Mandate:** PRISM extends its support to any citizen of the country through **direct benefit transfer** in the core technology areas for idea development, prototype development and pilot scaling, and patenting.
- **Technology Areas:** Affordable Healthcare, Water, Sewage Management, Green Technology, Clean Energy, Industrially Utilizable Smart Materials, Waste to Wealth aligned with our National objectives.
- **Eligibility:** Under the initiative, **an innovator of Indian nationality - student, professional and common citizen -** is provided technical, strategic, and financial assistance by DSIR-PRISM. The programme is implemented across
- **Significance:** It is aimed at transforming an individual innovator into a successful technopreneur by promoting, supporting, and funding implementable and commercially viable innovations created for the society.
- **Synergy:** The innovation movement by DSIR-PRISM is making synergy with three National Initiatives like **Unnat Bharat Abhiyan, Smart India Hackathon and Rural Technology Action Group (RuTAG)**.
- **Grant:** The grant amount in Phase I is around Rs. 2.0 lakhs to Rs. 20.00 lakhs and in Phase II maximum of Rs. 50.00 lakhs.

Apophis

In News

- The USA’s NASA space agency has ruled out the possibility of the dreaded asteroid Apophis causing any damage to the Earth for the next 100 years.
- Apophis measures 340 metres across.

Read about Asteroid in previous Edition.

InSight Mission

Context

- NASA’s InSight lander has detected two strong, clear quakes originating in a location of Mars called **Cerberus Fossae** – the same place where two strong quakes were seen earlier in the mission.

About

- The Interior Exploration using Seismic Investigations, Geodesy and Heat Transport (InSight) mission is a robotic lander designed to study the deep interior of the planet Mars.
- It is the first program to analyze the interior of the Red Planet.
- **Launcher:** The mission was launched in 2018 aboard an Atlas V-401 rocket.
- **Landing Site:** It successfully landed at Elysium Planitia on Mars.
- **Objectives:** InSight Lander’s objectives are to
 - place a seismometer, called SEIS, on the surface of Mars to measure seismic activity
 - provide accurate 3D models of the planet’s interior;
 - measure internal heat flow using a heat probe called HP3 to study Mars’ early geological evolution.
 - This could bring a new understanding of how the Solar System’s terrestrial planets – Mercury, Venus, Earth, Mars – and Earth’s Moon form and evolve.

African Swine Fever

Context

- The African Swine Fever (ASF), killed more than 1,700 pigs in over a month in Mizoram.

About

- ASF:** ASF is a severe viral disease that affects wild and domestic pigs typically resulting in an acute haemorrhagic fever. The disease has a case **fatality rate (CFR) of almost 100 per cent**.
- Causative Agent:** African swine fever virus (ASFV). It is a **large, double-stranded DNA virus** in the Asfarviridae family. It is the **only virus with a double-stranded DNA genome** known to be transmitted by arthropods.
- Details:** It persistently **infects its natural hosts, warthogs, bushpigs, and soft ticks** which act as a vector, with no disease signs. It **does not cause disease in humans**. ASFV is **endemic to sub-Saharan Africa**. ASFV replicates in the cytoplasm of infected cells.
- Transmission:** Its routes of transmission include **direct contact with an infected or wild pig** (alive or dead), indirect contact through ingestion of contaminated material such as food waste, feed or garbage, or through biological vectors such as ticks. ASF is **not a threat to human health and cannot be transmitted from pigs to humans**. It is **not a food safety issue**.
- Rate of Infection:** Even so, while ASF is lethal, it is **less infectious than other animal diseases** such as foot-and-mouth disease.
- Vaccine:** As of now, **there is no approved vaccine**, which is also a reason why animals are culled to prevent the spread of infection.

Narrow-Line Seyfert 1 (NLS1)

In News

- Astronomers have discovered a **new active galaxy** called the Narrow-Line Seyfert 1 (NLS1) galaxy.
- It is about 31 billion light-years away.
- It is identified as the farthest gamma-ray emitting galaxy.

AGN

- Active galaxies are galaxies that have a small core of emission embedded at the center of an otherwise typical galaxy.
- This core is typically highly variable and very bright compared to the rest of the galaxy.
- An active galaxy emits up to thousands of times more energy than a normal galaxy.
- Most of this energy is released not in visible light but in other wavelengths, from radio waves to gamma rays.
- In addition, long jets of gas can spew forth from the galaxy at nearly the speed of light.
- This activity is driven by a supermassive black hole in the galaxy's nucleus.



HGCO19

Context

- Ministry of Science & Technology has announced that it has approved additional funding towards clinical studies of COVID-19 vaccine - HGCO19.

About

- It is India's 'first of its kind' mRNA-based COVID-19 vaccine.

Working

- Most vaccines contain an infectious pathogen or a part of it, but mRNA vaccines do not.
- An mRNA vaccine delivers the instructions for making a bacterial or viral protein to our cells.
- Our immune system then responds to these proteins and develops the tools to react to future infections with the pathogen.

Messenger RNA (mRNA) is a single-stranded molecule naturally present in all of our cells. It carries the instructions for making proteins from our genes, located in the cell nucleus, to the cytoplasm, the main body of our cells.

Enzymes in the cytoplasm then translate the information stored in mRNA and make proteins.

Significance

- mRNA vaccines are considered safe as mRNA is non-infectious, non-integrating in nature, and degraded by standard cellular mechanisms.
- They are highly efficacious because of their inherent capability of being translatable into the protein structure inside the cell cytoplasm.
- Additionally, mRNA vaccines are fully synthetic and do not require a host for growth, e.g., eggs or bacteria.
- Therefore, they can be quickly manufactured inexpensively.

Brucellosis

Context

- Animal Husbandry officials have launched preventive measures after a few cases of brucellosis, was detected in animals in Kerala.

About

- Brucellosis is a **zoonotic infection** caused by the bacterial **genus Brucella**.
- **Infect:** It mainly infects cattle, swine, goats, sheep and dogs.
- **Transmission:** The bacteria are transmitted from animals to humans by ingestion through infected food products, direct contact with an infected animal, or inhalation of aerosols. Most cases are caused by ingesting unpasteurized milk or cheese from infected goats or sheep. **Human-to-human transmission is very rare.**
- **Alternate Names:** The disease is known by various names, including **Mediterranean fever, Malta fever, gastric remittent fever, and undulant fever.**
- **Symptoms:** Flu-like symptoms, including fever, weakness, malaise and weight loss.
- **Bacteria:** Four species infect humans: **B. abortus, B. canis, B. melitensis, and B. suis.** Worldwide, **Brucella melitensis** is the most prevalent species causing human brucellosis.
- **Treatment:** It is usually treated with antibiotics like rifampin and doxycycline.

Virafin

Context

- Indian pharmaceutical company Zydus Cadila has received approval from the Drug Controller General of India for emergency use of its anti-viral drug Virafin for treating moderate Covid-19 cases.

About

- Virafin' is pegylated interferon alpha-2b.
- Interferons are signalling proteins that help the body's immune system defend against viral infections.
- Before it was repurposed for COVID-19, pegylated interferon alpha 2b was **used to help treat Hepatitis C.**

Drugs Controller General of India (DCGI)

- It is the head of department of the Central Drugs Standard Control Organization.
- It is responsible for **approval of licences of specified categories of drugs such as blood and blood products, IV fluids, vaccines, and sera** in India.
- Drugs Controller General of India, comes under **the Ministry of Health & Family Welfare.**
- DCGI also sets standards for manufacturing, sales, import, and distribution of drugs in India.

Trachoma

Context

- The World Health Organization (WHO) has validated Gambia for having eliminated trachoma as a public health problem, making it the second country in WHO's African Region to achieve this milestone.

About

- Trachoma is a disease of the eye caused by infection with the **bacterium Chlamydia trachomatis**.
- Blindness from trachoma is **irreversible**.
- **Transmission:** Infection spreads through personal contact (via hands, clothes or bedding) and by flies that have been in contact with discharge from the eyes or nose of an infected person.
Environmental factors associated with more intense transmission of C. trachomatis include:
 - inadequate hygiene
 - crowded households
 - inadequate access to water
 - inadequate access to and use of sanitation.
- **Distribution:** Trachoma is hyperendemic in many of the poorest and most rural areas of Africa, Central and South America, Asia, Australia and the Middle East. Africa remains the most affected continent.
- **Prevention and control:** Elimination programmes in endemic countries are being implemented using the WHO-recommended **SAFE strategy**. This consists of:
 - S - Surgery to treat the blinding stage (trachomatous trichiasis);
 - A - Antibiotics to clear infection, particularly mass drug administration of the antibiotic azithromycin, which is donated by the manufacturer to elimination programmes, through the International Trachoma Initiative;
 - F - Facial cleanliness; and
 - E - Environmental improvement, particularly improving access to water and sanitation.
- **Elimination:** The World Health Assembly **adopted resolution WHA51.11** in 1998, targeting the global elimination of trachoma as a public health problem by 2020. The World Health Assembly has now set a **new target date of 2030**.

Hog Cholera and Sheep pox

Context

- ICAR-Indian Veterinary Research Institute (IVRI), which has developed an indigenous vaccine for classical swine fever (CSF) and sheep pox diseases, transferred this technology to an animal healthcare company Hester Biosciences.

Classical Swine Fever

- Classical swine fever (CSF), also known as hog cholera, is a contagious viral disease of domestic and wild swine.
- It is caused by a virus of the genus Pestivirus of the family Flaviviridae.
- **Transmission:** Through direct contact between healthy swine and those infected with CSF virus. CSF virus can survive in pork and processed pork products for months when meat is refrigerated and for years when it is frozen.
- **Prevention:** Vaccination. Applying strict and rigorous sanitary prophylaxis, and hygiene measures protecting domestic pigs from contact with wild boar are the most effective measures to prevent the disease.
- When an outbreak occurs, culling of pigs is done.

Sheep pox

- Sheeppox is a highly contagious disease of sheep caused by a poxvirus.
- **Transmission:** Sheeppox virus is an aerosol and can also be transmitted via contact with an infected animal. The saliva, secretions, feces, milk or scabs of those with SPV also carry the virus.
- **Symptoms:** High fever, and symptoms of pneumonia and acute enteritis. Skin lesions appear particularly in parts free from wool, notably around the eyes, inner side of the thigh, udder and under surface of the tail. The internal organs such as trachea, lungs, kidneys and intestines are also affected.
- There is **no treatment for the sheep pox disease**. The most effective control over the disease has been **the live, attenuated virus vaccine** which has been shown to produce good immunity.
- Sheeppox virus (SPV) is the most severe of all the animal pox diseases and can result in some of the most significant economic consequences due to poor wool and leather quality.

Whitest ever Paint

Context

- Engineers in the US claim to have created 'the whitest paint yet' – which they say will help tackle global warming.

About

- The ultra-white coating, reflects up to 98.1 per cent of sunlight while sending away infrared heat.
- This, Ultra-white paint can soon replace air-conditioning, according to scientists.
- Currently, paints on the market designed to reject heat only reflect somewhere between 80 and 90 per cent of sunlight.
- This new version uses a chemical compound called barium sulfate.
- Two features give the paint its extreme whiteness – one is the paint's very high concentration of barium sulfate, which is also used to make photo paper and cosmetics white.
- The second feature is that the barium sulfate particles are all different sizes in the paint.
- Researchers believe that this white may be the closest equivalent to some of the blackest blacks ever developed.
- A product called Vantablack, absorbs up to 99.965 per cent of visible light.

ENVIRONMENT

Rosefinch

Context

- New species from Arunachal added to India's bird list.

More about news

- BNHS team spotted the **three-banded rosefinch** at an altitude higher than its recorded perch in China.
- A bird spotted in **Arunachal Pradesh** has become the 1,340th species of the bird family in India.

About Rosefinch

- The three-banded rosefinch is a resident of southern China and a vagrant in Bhutan.
- The new species of bird was found during an intensive survey of finches across the Eastern Himalayas as a part of an ongoing study.
- The three-banded rosefinch belongs to the family Fringillidae, which are seed-eating passerine birds with a distinctively conical bill.
- Little information is available on the ecology of this species.
- IUCN status: Least Concern.



Dolphin boom in Odisha's Chilikalake

Context

- The population of dolphins in **Chilika, India's largest brackish water lake**, and along the Odisha coast has doubled this year compared with last year.

More about news

- The population estimation exercise for dolphins and other cetacean species covered almost the entire coast of Odisha.
- Three species were recorded** during the census, with 544 **Irrawaddy, bottle-nose and humpback dolphins** sighted this year, compared with 233 last year.
- Wildlife activists are elated over the sizeable growth in the population of endangered Irrawaddy dolphins, which are mostly found in Chilikalake, **jumping from 146 in 2020 to 162 this year**.

- Apart from Chilika, 39 Irrawaddy dolphins were sighted in the **Rajnagar mangrove** division, though their number has come down from 60 in 2020.
- The **highest growth** has been noticed in the case of **humpback dolphins**. Only two humpbacks were sighted in the Rajnagar mangrove in 2020. In 2021, however, this population grew astronomically to 281.
- The number of **bottle-nose dolphins** grew from 23 in 2020 to 54 this year.

The rise in the Irrawaddy [dolphin] population in Chilika can be attributed to

- **Eviction of illegal fish enclosures**
- Thousands of hectares of Chilika water were made encroachment-free
- Irrawaddy dolphins found unobstructed area for movement due to the COVID-19 lockdown

The Irrawaddy dolphin (*Orcaella brevirostris*)

- It is a euryhaline species of oceanic dolphin found in discontinuous subpopulations near sea coasts and in estuaries and rivers in parts of the **Bay of Bengal and Southeast Asia**.



- Although it is called the Irrawaddy river dolphin, it is **not a true river dolphin**, but an **oceanic dolphin** that lives in brackish water near coasts, river mouths, and estuaries.
- The **Chilika Lake in Odisha** has emerged as the “single largest habitat of Irrawaddy dolphins in the world”, following a fresh monitoring survey that pegs the number of individuals of the endangered species at 155.
- Irrawaddy dolphins are classified as ‘**Endangered**’ in the IUCN Red List of Threatened Species.

Humpback dolphins

- These dolphins are characterized by the **conspicuous humps and elongated dorsal fins** found on the backs of adults of the species.
- They are found close to shore along the coast of West Africa and right along the coast of the Indian Ocean from South Africa to Australia.
- The Indian Ocean humpback dolphin was only recognised in recent years is already classified as **endangered**.



Bottle-nose dolphins

- Bottlenose dolphins inhabit warm and temperate seas worldwide, being found everywhere except for the Arctic and Antarctic Circle regions.
- Bottlenose dolphins have the third largest encephalization levels of any mammal on Earth (humans have the largest), sharing close ratios with those of humans and other great apes, which more than likely contributes to their high intelligence and emotional intelligence.
- Common bottlenose dolphins are considered Least Concern by the IUCN on a global level.



Asiatic wild dog

Context

- A recent study on dhole or Asiatic wild dog, an **endangered large carnivore**, has found that the **Wayanad Wildlife Sanctuary (WSS)**, a major habitat of elephants and tigers, is also host to a good number of dholes.

Dhole population estimation

- The first ever study on the carnivore organised by the Wildlife Conservation Society-India, National Centre for Biological Sciences, Kerala Veterinary and Animal Sciences University, University of Florida, and Stanford University has found that the sanctuary **has close to 50 dholes**.
- It is the **first attempt to estimate dhole populations through targeted surveys designed specifically for this species**.
- A recent tiger survey showed that the sanctuary also has a relatively large tiger population, with 11 to 13 animals per 100 sq km.
- The fact **that two large carnivores can coexist** in such high densities is **indicative of an abundant prey base and high quality habitat**.

Method of estimation

- Until now, there were no methods available to reliably estimate dhole populations.
- For the new study, scientists developed a scientifically robust method to estimate dhole numbers using **genetic information and advanced population models**.
- Field surveys were held across 350 sq km of the sanctuary to collect **dhole scat (faecal droppings) in 2019 and DNA was extracted from it to identify unique dhole individuals**.
- Combining this with sophisticated statistical methods called **spatial capture-recapture models**, researchers were able to estimate and map dhole numbers and density across the sanctuary.
- For species like **dholes that do not have individual markings, genetic methods are the only way** to get statistically robust estimates of population size.

Significance

- The cutting-edge genetic tools to understand more about this endangered species will be critical for evidence-based conservation of dholes.
- The study was recently published in the international journal Biological Conservation.

About Dhole

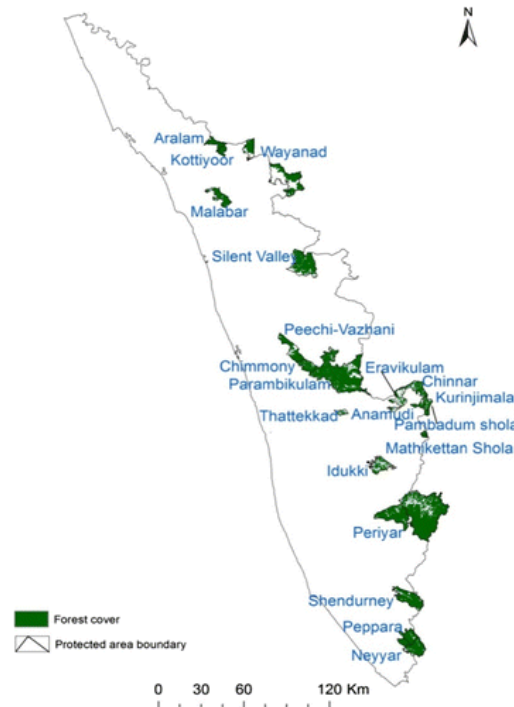
- It is a native species to Central, South, East Asia, and Southeast Asia.
- It is also called as Asian wild dog, Asiatic wild dog, Indian wild dog, whistling dog, red-dog, and mountain wolf.
- It plays an important role as apex predators in forest ecosystems.
- Besides the tiger, the dhole is the only large carnivore in India that is under the International Union for Conservation of Nature's 'endangered' category.
- India supports the highest number of dholes in the world, **still do not have targeted management plans for scientific monitoring of the species**.
- It is **listed as Endangered** by the IUCN as populations are decreasing and are estimated at fewer than 2,500 adults.
- Factors contributing to this decline include **habitat loss, loss of prey, competition with other species, persecution due to livestock predation and disease transfer from domestic dogs**.



Wayanad Wildlife Sanctuary

- It is an animal sanctuary in Wayanad, Kerala, India. It is the **second largest wildlife sanctuary** in Kerala.
- This wildlife area houses some of the rare and endangered species of both flora and fauna.
- Established in 1973, the sanctuary is now an **integral part of the Nilgiri Biosphere Reserve**.

- It is bounded by **protected area network of Nagarhole and Bandipur of Karnataka in the northeast, and on the southeast by Mudumalai of Tamil Nadu.**
- It is part of the Deccan Plateau and the vegetation is predominantly of the south Indian moist deciduous teak forests.
- The wildlife sanctuary comes under **Protect Elephant.**
- Wayanad has the largest population of Adivasi in Kerala. Scheduled tribes here include **Paniyas, Kurumas, Adiyans, Kurichiyas, Ooralis and Kattunaikkans.**



Indian Rhino Vision 2020

Context

- Last rhinos translocated in Assam under Vision 2020 to increase population.
- Target of attaining **a population of 3,000 rhinos** almost achieved but the animal could be reintroduced in only one of the four protected areas planned.

Indian Rhino Vision 2020 (IRV2020)

- Designed in **2005**, the IRV2020 is believed to have achieved its target of attaining a population of **3,000 rhinos in Assam.**
- But the plan to spread the Rhinoceros unicornis across four protected areas beyond Kaziranga National Park, Orang National Park and Pobitora could not materialise.
- **Wild-to-wild translocations** were an essential part of IRV2020 – moving rhinos from densely populated parks like Kaziranga NP, to ones in need of more rhinos, like Manas NP.
- Rhinos are now found in **four Protected Areas in Assam: Pabitora Wildlife Reserve, Rajiv Gandhi Orang National Park, Kaziranga National Park, and Manas National Park.**

Great Indian rhinoceros

- The Indian rhinoceros also called greater one-horned rhinoceros or great Indian rhinoceros is a rhinoceros species **native to the Indian subcontinent.**



- It is the **only large mammal species in Asia** to be down-listed from endangered to vulnerable in the **International Union for Conservation of Nature, IUCN Red list** in 2008.
- The extent and quality of the rhino's most important habitat are considered to be in decline due to hunting, agricultural development in tarai region and livestock encroachment.
- Indian rhinos once ranged throughout the entire stretch of the Indo-Gangetic Plain has reduced drastically to 11 sites in northern India and southern Nepal.

About KNP:

- Kaziranga National park's is home to more than 2200 Indian **one-horned rhinoceros**, approximately **2/3rd of their total world population**.
- It is located in the edge of the **Eastern Himalayan biodiversity hotspots** – Golaghat and Nagaon district.
- In 1985, it was declared as a **World Heritage Site by UNESCO**.
- **It was declared as Tiger Reserve in 2006**.
- It is recognized as an **Important Bird Area by BirdLife International** for the conservation of avifaunal species.



Water challenges & SDGs

Context

- **India-Denmark** join hands through **Atal Innovation Mission** for global collaboration towards world class innovative solutions addressing water challenges & SDGs.

Other details

- As part of **Indo-Danish bilateral Green strategic partnership**, NITI Aayog and Embassy of Denmark to India is to jointly work towards promoting innovation and entrepreneurship amongst the aspiring entrepreneurs.
- This initiative will also focus on **water use in agriculture that takes up to 92 percent of the water**.
- It will stress on **three key and crucial points Water, Women, and the World**.
- **Water is the stream of life** hence its importance for present and future generations cannot be stressed enough.
- **Women empowerment** is key to the growth of a nation and to the sustainability goals of the World.

- If we do not solve water management and challenges issue, regardless of the location, it will impacts lives across the world.

SDG 6: Clean Water And Sanitation

- **6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all
- **6.2** By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
- **6.3** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- **6.4** By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
- **6.5** By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
- **6.6** By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

ATAL INNOVATION MISSION: IN A NUTSHELL

The government is looking to set up tinkering and incubation labs besides providing a leg-up to established incubation centres.

500

TINKERING LABS

AIM will provide grant-in-aid that includes a one-time establishment cost of Rs 10 lakh and operational expense of Rs 10 lakh for five years to each lab.

100

INCUBATION CENTRES

AIM will provide a grant-in-aid of Rs 10 crore to each incubation centre for five years to cover the capital and operational expenditure cost in running the centre. The applicant would have to provide a built-up space of at least 10,000 sq ft to qualify for financial support.

SCALE-UP SUPPORT TO 10 ESTABLISHED INCUBATION CENTRES | Grant-in-aid support of Rs 10 crore will be provided in two annual instalments of Rs 5 crore each.

Monkeydactyl-the flying reptile with the 'oldest opposable thumbs'

Context

- The new pterosaur fossil Monkeydactyl was discovered in China and is believed to be 160 million years old.

More about news

- An international team of researchers from China, Brazil, UK, Denmark and Japan, has discovered fossil of so called **Kunpengopterus antipollicatus**, also dubbed "Monkeydactyl".
- Researchers have described this pterosaur species with opposable thumbs, which could likely be the **earliest-known instance of the limb**.
- The pterosaur species were **reptiles, close cousins of dinosaurs** and the **first animals after insects to evolve powered flight**.
- They evolved into various species; while some were as large as an F-16 fighter jet, others were as small as paper airplanes.

Why is opposability of the thumb important and how did it evolve?

- Anthropogeny defines opposability of the thumb as being able to "simultaneously flex, abduct and medially rotate the thumb" in a way that one is able to bring the tip of the thumb to touch the tips of the other fingers.
- Along with humans, **some ancient monkeys and apes also had opposable thumbs**.
- Humans, have a relatively longer and distally placed thumb, and larger



thumb muscles.

- This means that **humans' tip-to-tip precision grip** when holding smaller objects is **superior to non-human primates**.
- This is the reason that humans are able to hold a pen, unscrew an earring stopper, or put a thread through a needle hole.
- The **grasping hands of primates** developed as a result of their life in the trees — an opposable thumb made it easier for the common ancestor of all primates to cling on to tree branches.

Dal Lake

Context

- Srinagar's **Dal Lake** along with five other famous ones in Jammu and Kashmir are to be declared **protected wetlands**.
- The other lakes which are to be declared protected wetlands includes **Wular, Nigeen lakes** in the Kashmir region and **Sanasar, Manasbal and Purmandal lakes (ChottaKashi)** in the Jammu region as protected wetlands.
- Forest Department will prepare digital inventory, documentation and geo-spatial database on wetlands, to profile various wetlands of Jammu and Kashmir and recommend their notification under the **Environment Protection Act and Wetland (Conversation & Management) rules**.

Dal Lake

- It is a lake in **Srinagar**, the summer capital of Jammu and Kashmir, India.
- It is an **urban lake**, which is the **second largest** in the union territory of Jammu and Kashmir.
- It is named the "**Lake of Flowers**", "Jewel in the crown of Kashmir" or "Srinagar's Jewel".
- The lake is also an important source for commercial operations in fishing and water plant harvesting

Wular Lake

- It is one of the largest fresh water lakes in Asia.
- It is sited in Jammu and Kashmir, India.
- The lake basin was formed as a result of tectonic activity and is fed by the Jhelum River.
- In ancient times, Wular Lake was also called Mahapadmasar.
- The lake is one of the 42 Indian wetlands designated as a Ramsar site.

Nigeen Lake

- It is a mildly **eutrophic lake** located in Srinagar, Jammu and Kashmir, India.
- It is sometimes considered a **part of the Dal lake** and is connected to it via a narrow strait.

Purmandal (also called ChhotaKashi)

- It is a village located on the **Devika River** in Samba district, Jammu and Kashmir, India.
- The village and its temples are a **pilgrimage site for Hindus**, who believe bathing in the river cleanses the soul.

Wetlands (Management and Conservation) Rules, 2017

- The Union Environment ministry revised the rules under the **Environment (Protection) Act, 1986**, and called them Wetlands (Management and Conservation) Rules, 2017.
- As per the 2017 rules, these authorities were required to **designate an expert each for wetlands ecology, hydrology, fisheries, landscape planning and socioeconomics**.
- The latest guidelines recommended that "**at least one member may be drawn from civil society to enable stakeholder representation**."
- The 2017 rules had also stressed that the state governments shall designate a "**department as nodal department for wetlands**", which "**shall provide all necessary support and act as secretariat to the authority**."
- The guidelines for states prescribe that the state or union territory administrations may allocate budget and human resources to ensure smooth functioning of the authority and conduct of its various activities.
- The Wetlands (Management and Conservation) Rules, 2017 aims to
 - guide states in preparing a list of wetlands;
 - identifying wetlands for notification under the Wetlands (Conservation and Management) Rules, 2017;
 - delineating wetlands, wetlands complexes and zone of influence;

- developing a list of activities to be regulated and permitted; and
- developing an integrated management plan for wetlands, which are rich reservoirs of biodiversity.

Amboli- biodiversity heritage site

Context

- The Maharashtra government declared an area at **Amboli** in **Westernghats** in **Sindhudurg** district, where a rare freshwater fish species **SchisturaHiranyakeshi** was discovered, as a biodiversity heritage site.

More about news

- **SchisturaHiranyakeshi** is a rare sub-species of **Schistura**, a freshwater loach. The fish was named after the **Hiranyakeshi** river near **Amboli** village.
- **Schistura** is a small and colourful fish that lives in water and streams in an abundance of oxygen.
- Earlier, the State government had declared the **Glory of Allapalli** in **Gadchiroli** district, **Landor Khori Park** in **Jalgaon**, **Ganesh Khind** in **Pune**, **myristica** swamp vegetation in **Sindhudurg** district as biodiversity heritage sites.

Biodiversity Heritage Sites

- These are **notified** areas of **biodiversity** importance in India.
- The Indian State Government can **notify** the **Biodiversity Heritage Sites** in **consultation** with **local governing bodies** under **Section 37** of **Biological Diversity Act of 2002**.
- These areas are considered **unique** and **fragile** ecosystems.
- They can be either **terrestrial**, **coastal** and **inland** waters or **marine** ecosystems.

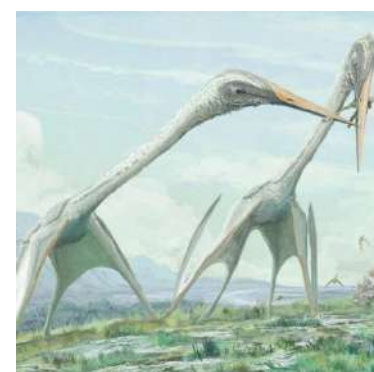
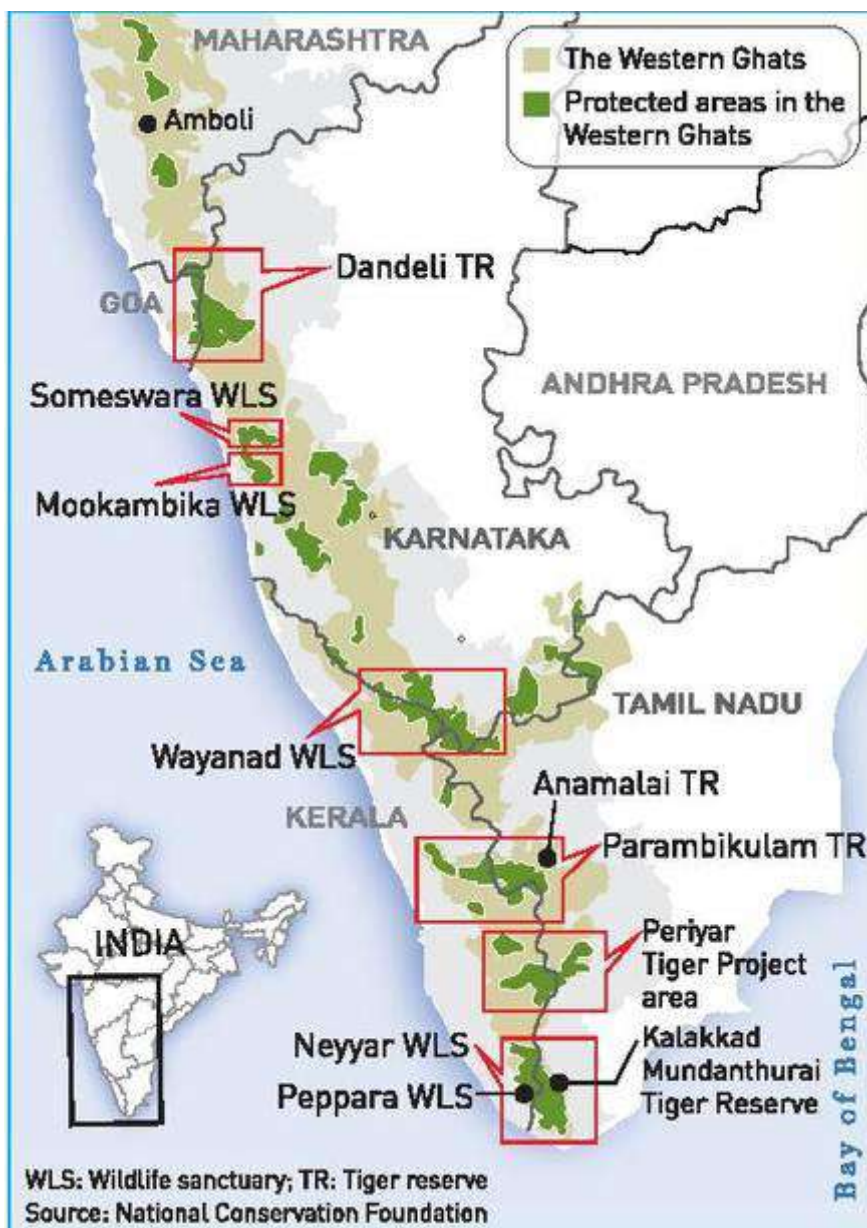
Pterosaurs

Context

- A new research about the giraffe-like long necks of dinosaurs' cousins published.

Pterosaurs

- Pterosaurs are **reptiles** that are **close cousins** of **dinosaurs**, the first animals after insects to evolve powered flight.
- Some pterosaurs were as large as an F-16 fighter jet, while others were as small as a paper airplane.



- Pterosaurs **went extinct about 65-66 million years ago** (end of the Cretaceous period) and while they did not leave any of their descendants behind, scientists and researchers look for other ways to understand them – through their fossils.

Azhdarchid pterosaurs

- The giant reptiles that flew in the skies nearly 65 million years ago, had **necks longer than that of a giraffe** (on average a giraffe's neck is about 6 feet long).
- Now, researchers have reported a new finding about their long necks – that the thin neck vertebrae were supported by an intricate internal structure that is unlike anything seen before.
- Some of these pterosaurs were the **largest animals to have flown in the sky**, with wingspans greater than 30 feet, which is equivalent to the length of the digestive system in an adult human being.

Cynodont

Context

- The researchers from the Indian Institute of Technology Kharagpur, used scanning electron microscopy to study about 10 teeth samples collected from the village of Tihki in Shahdol District, Madhya Pradesh.

More about news

- The teeth were studied and compared with previously reported cynodonts.
- The results showed that they had found a new species, and they named it *Rewaconodonindicus*, indicating India.
- This vertebrate fossils, has yielded a new species and two genera of **cynodonts, small rat-like animals that lived about 220 million years ago**.
- The team also identified two new genera from the area. The first was named *Inditheriumfloris*, after India and the Latin word therium meaning beast.
- The second was named *Tikiodonromptoni*, after Tiki Formation and Greek word odon meaning tooth.

Evolutionary link

- Cynodonts are important in evolutionary studies as this **group ultimately gave rise to the present-day mammals**.
- By studying their molar and premolar teeth, we see how they slowly evolved and modified.
- Their crown shape shows that these animals are actually **intermediate forms that are very near to the mammalian line of evolution**.
- Cynodonts and living mammals both belong to a group of egg-laying vertebrates (amniotes) called **synapsids**.
- The ones similar to the newly discovered ones were previously found in Laurasia which includes North America, England, Germany, Switzerland, France, and Belgium.
- This possibly suggests **abiotic interchange between India and Laurasian regions and/or similarity in paleoclimatic conditions**, but this requires further study,



Eudiscopusdenticulus

Context

- Meghalaya records India's first bat with sticky disks.

Background

- A team of scientists from the Zoological Survey of India (ZSI) and a few European natural history museums stumbled upon this **"very specialised" small bat with "disk-like pads in the thumb and bright orange colouration"** while sampling in a bamboo patch almost a year ago.

More about news

- *Eudiscopus denticulus* was recorded from the Lailad area near the **Nongkhylllem Wildlife Sanctuary**, about 1,000 km west of its nearest known habitat in Myanmar.
- **Meghalaya has yielded India's first bamboo-dwelling bat with sticky disks**, taking the species count of the flying mammal in the country to 130.
- The newly-recorded bat was presumed to be a bamboo-dwelling species, but its flattened skull and adhesive pads helped in identifying it as the disk-footed known from specific localities in southern China, Vietnam, Thailand and Myanmar.
- Scientists analysed the **very high frequency echolocation calls of the disk-footed bat**, which was suitable for orientation in a cluttered environment such as inside bamboo groves.
- The disk-footed bat has raised Meghalaya's bat count to 66, the most for any State in India.



National climate vulnerability assessment Report

Context

- The National climate vulnerability assessment report released by the Department of Science and Technology using a common framework.

Key findings

- It has identified Jharkhand, Mizoram, Orissa, Chhattisgarh, Assam, Bihar, Arunachal Pradesh, and West Bengal as states highly vulnerable to climate change.
- These states, mostly in the eastern part of the country, require prioritization of adaptation interventions.
- The report titled 'Climate Vulnerability Assessment for Adaptation Planning in India Using a Common Framework', identifies the most vulnerable states and districts in India with respect to current climate risk and key drivers of vulnerability.

Need

- Extreme events are on rise both in terms of their **number and severity**.
- Mapping the parts of India that are vulnerable to such changes will help **initiating climate actions at the ground level**.

Significance of these findings

- It can **benefit climate-vulnerable communities** across India through development of better-designed climate change adaptation projects.
- Assessing vulnerability is the first step towards assessing climate risk.
- There are two other components like **Hazard and Exposure** that need to be also assessed to arrive at overall climate risk.
- Report will help to identify the most vulnerable states, districts & panchayats and will **aid in prioritizing adaptation investment, developing and implementing adaptation programs**.
- It will contribute to the **development of more targeted climate change projects and that they will support the implementation and the potential revisions of the State Action Plans on Climate Change**.
- The assessments can further be used for **India's reporting on the Nationally Determined Contributions under the Paris Agreement**.
- These assessments will **support India's National Action Plan on Climate Change**.

Coffeastenophylla

Context

- In dense tropical forests in Sierra Leone, scientists have rediscovered a coffee species not seen in the wild in decades — a plant they say may help secure the future of this valuable commodity that has been imperiled by climate change.
- The coffee species Coffeastenophylla, which **bears black fruit rather than the red fruit** typical of the two coffee species that are widely grown commercially, is seen in **Ivory Coast**.

About Coffeastenophylla

- Stenophylla was found to have a complex flavour profile, with natural sweetness, medium-high acidity, fruitiness and good "body".
- It possesses greater tolerance for higher temperatures than the Arabica coffee that makes up 56% of global production and the robusta coffee that makes up 43%.
- The stenophylla coffee, have a superior flavour, similar to Arabica.
- Stenophylla was farmed in parts of West Africa and exported to Europe until the early 20th century before being abandoned as a crop after robusta's introduction.
- Arabica's flavour is rated as superior and brings higher prices than robusta, which is mainly used for instant coffee and coffee blends.
- But Arabica has limited resilience to climate change and research has shown its global production could fall by at least 50% by mid-century.
- Stenophylla grows at a mean annual temperature of 24.9°C — 1.9°C higher than robusta coffee and up to 6.8°C higher than Arabica coffee
- Stenophylla could be used, with minimum domestication, as a high-value coffee for farmers in warmer climates.
- It is an important resource for breeding a new generation of climate-resilient coffee crop plants, given that it possesses a great flavour and heat tolerance.
- Stenophylla is threatened with extinction amid large-scale deforestation in the three countries where it has been known to grow in the wild: Sierra Leone, Guinea and Ivory Coast.



Air pollution Cost

Context

- Air pollution costs Indian businesses \$95 billion a year: study

Key findings of study

- Every year, higher pollution levels shave off \$1.3 billion from India's IT sector in lost productivity, said the study by industry group CII; Clean Air Fund, a charity; and consulting firm Dalberg.
- If New Delhi fails to clean its toxic air, the booming IT sector could lose more than \$2.5 every year, the study warned.
- Air pollution costs Indian businesses \$95 billion every year, or 3% of the country's Gross Domestic Product, and cuts annual consumer spending by \$22 billion.
- New Delhi is the world's most polluted capital, and **India is home to 35 of the world's 50 most polluted cities**.

State of the Global Climate 2020

Context

- The State of the Global Climate 2020 lists the major global warming milestones
- **World Meteorological Organization (WMO)** released its annual State of the Global Climate for 2020.
 - The World Meteorological Organization (WMO) is a **specialized agency of the United Nations** responsible for **promoting international cooperation on atmospheric science, climatology, hydrology and geophysics**.

- The WMO originated from the International Meteorological Organization, a nongovernmental organization founded in 1873 as a forum for exchanging weather data and research.

According to the report

- Extreme weather combined with COVID-19 in a double blow for millions of people in 2020.
- However, the pandemic-related economic slowdown failed to put a brake on climate change drivers and accelerating impacts.
- 2020 was one of the three warmest years on record, despite a cooling La Niña event.
- The global average temperature was about 1.2° Celsius above the pre-industrial (1850-1900) level.
- The six years since 2015 have been the warmest on record. 2011-2020 was the warmest decade on record.

The WMO report listed **five key indicators of irreversible changes** in the global climate:

- **Greenhouse Gases:** Concentrations of the major greenhouse gases continued to increase in 2019 and 2020.
- **Oceans:** Over 80 per cent of the ocean area experienced at least one marine heatwave in 2020. The percentage of the ocean that experienced “strong” marine heat waves was greater than that which experienced “moderate” marine heat waves.
- **Sea-level rise:** There was a blip in summer of 2020 that recorded a drop in sea level. The WMO report says it is due to the La Niña induced cooling.
- **The Arctic and the Antarctica:** In 2020, Arctic sea-ice extent minimum after the summer melt was 3.74 million square kilometre, marking only the second time on record that it shrank to less than 4 million sq km.

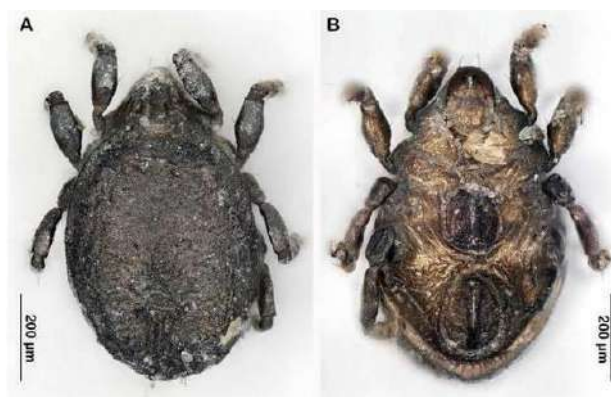
Ameronothrus twitter

Context

- A new bug Ameronothrus twitter discovered via a tweet by Japanese and Austrian researchers

Ameronothrus twitter

- It is just 0.7 millimetres long, the mites are miniscule and harmless to people.
- They are a type of coastal mite that eats algae and lichen and lives in a group.



Indo-German project ‘Pyrasol’

Context

- The foundation stone of the Integrated Solar Dryer and Pyrolysis pilot was laid.

More about news

- The pilot is part of the **Indo-German project ‘Pyrasol’** launched to transform urban organic waste into biochar and energy in smart cities.
 - Pyrolysis is the thermal decomposition of materials at elevated temperatures in an inert atmosphere. It involves a change of chemical composition.
- The project will ultimately lead to technology development for the **joint processing of Fibrous Organic Waste (FOW) and Sewage Sludge (SS) of Indian smart cities** into hygienic and highly valuable biochar associated with energy recovery, carbon sequestration and environmental improvement.
- Indo-German Science & Technology Centre (IGSTC) through its flagship program ‘**2+2 Projects**’, catalyses innovation centric R&D projects by synergising the strength of research and academic institutions and public/private industries from India and Germany.

Kelp forest

Context

- The 85-minute documentary, “My Octopus Teacher”, which won the best documentary award at the recently concluded Academy Awards, is about the relationship that developed between a human being and a wild octopus.
- Lead actor of the documentary has founded the Sea Change Project, where many divers work in tandem to protect the biodiversity of the Kelp forest.

About Kelp Forests

- Kelp forests are under water areas with a high density of kelp, which covers a large part of the world's coastlines.
- They are recognized as **one of the most productive and dynamic ecosystems on Earth**.
- Smaller areas of anchored kelp are called kelp beds.
- Kelp forests **occur worldwide throughout temperate and polar coastal oceans**.
- In 2007, kelp forests were also discovered in tropical waters near Ecuador.
- In context, algal kelp forest combined with coral reefs account for less than 1% of global primary productivity.
- Physically formed by **brown macroalgae**, kelp forests provide a **unique habitat for marine organisms and are a source for understanding many ecological processes**.
- Over the last century, they have been the focus of extensive research, particularly in trophic ecology, and continue to provoke important ideas that are relevant beyond this unique ecosystem.
- For example, kelp forests can **influence coastal oceanographic patterns and provide many ecosystem services**.
- However, the influence of humans has often contributed to kelp forest degradation.
- Of particular concern are the effects of **overfishing nearshore ecosystems**, which can release herbivores from their normal population regulation and result in the overgrazing of kelp and other algae.



Peacock

Context

- The Central Bureau of Investigation has booked a Delhi-based company and its director for allegedly smuggling peacock tail feathers to a China-based entity.

About peacock

- It is the **national bird of India**.
- It is protected under **Schedule-I of the Wild Life (Protection) Act**. The hunting of peacocks is also prohibited under the Act.
- It is listed as of **Least Concern** by the International Union for Conservation of Nature (IUCN).
- Poaching of peacocks for their **meat and feathers** and accidental poisoning by feeding on pesticide treated seeds are known threats to wild birds.



Pollution by thermal plants

Context

- India pushes deadline for coal-fired utilities to adopt new emission norms.

More about news


- India had initially set a 2017 deadline for thermal power plants to install Flue Gas Desulphurization units that cut emissions of sulphur dioxides.
 - Flue gas desulfurization **removes sulfur dioxide, nitrogen oxides and particulates from flue gases.**
 - Its Dry sorbent injection systems that introduce powdered hydrated lime (or other sorbent material) into **exhaust ducts to eliminate SO₂ and SO₃ from process emissions.**
- India has pushed back deadlines for coal-fired power plants to **adopt new emission norms by up to three years.**
- It allowed utilities that miss the new target to continue operating after paying a penalty.
- The new order dated April 1 from the Environment Ministry says plants near populous regions and the capital New Delhi will have to comply by **2022**, while **utilities in less polluting area shave up to 2025 to comply or retire units.**
- In case of **non-compliance, a penalty of up to 0.20 rupees (\$0.0027) will be levied for every unit of electricity produced.**
- The Power Ministry said that a “**graded action plan**” could help avoid immediate increase in power prices in various relatively clean areas of India and avoid unnecessary burden on power utilities and consumers.
- Thermal power companies, which produce three-fourths of the country’s electricity, **account for some 80% of its industrial emissions of particulate matter**, sulphur- and nitrous-oxides, which cause lung diseases, acid rain and smog.

Sadabahar

Context

- Kota farmer develops mango variety that bears fruits round the year.

More about news

- A farmer from Kota, Rajasthan, has developed an **innovative mango variety, which is a regular and round-the-year dwarf variety of mango called Sadabahar.**
 - It is **resistant to most major diseases and common mango disorders.**
 - The **fruit is sweeter in taste**, comparable to langra and being a **dwarf variety, is suitable for kitchen gardening, high-density plantation, and can be grown in pots for some years too.**
- 
- Besides, the flesh of the fruits, which is bourn round the year, is deep orange with sweet taste, and the pulp has very less fiber content, which differentiates it from other varieties.
 - It is in the process of being registered under the Protection of Plant Variety and Farmers Right Act and ICAR-National Bureau of Plant Genetic Resources (NBPGR), New Delhi.

Climate change shrinks marine life richness near equator: study

Context

- Research published finds that the total number of **open-water species** declined by **about half in the 40 years up to 2010** in tropical marine zones worldwide.
- During that time, sea surface temperatures in the tropics rose nearly 0.2°C.

- There is mounting evidence that the warming of waters due to climate change may be taking a large toll as well – both off the island's coast and globally.
- Climate change is already impacting marine species diversity distribution," with changes being **more dramatic in the Northern Hemisphere** where waters have warmed faster.
- While numerous factors like **overfishing** have impacted tropical species, there is a strong correlation between species decline and rising temperature.
- Fish species diversity tended to either plateau or decline at or above 20°C.

'Blink of an eye'

- Ocean warming is driving some species to migrate to cooler waters.
- The number of species attached to the seafloor remained somewhat stable in the tropics between the 1970s and 2010.

Urials

Context

- Despite the severe stress on the species and its declining numbers, the urial continues to hang on.

About URIALS

- **Ladakh the arid plateau** is home to seven species of ungulates, a little known **wild sheep called the urial**.
- **Shapu**, is a local name for the urial.
- The urial is a **wild sheep native to Central and South Asia**.
- It is listed as **Vulnerable on the IUCN Red List**.
- The urial is native to montane areas in the **Pamir Mountains, Hindu Kush and Himalayas** up to an elevation of 4,500 m (14,800 ft).
- It is distributed from northeastern Iran, Afghanistan, Turkmenistan, Tajikistan, Uzbekistan and southwestern Kazakhstan to northern Pakistan and **Ladakh in northwestern India**.
- It prefers grassland, open woodland and gentle slopes, but also inhabits cold arid zones with little vegetation.
- Despite the impressive size of their horns, urial rams rarely fight.
- Instead, they study their rival's posture, sizing them up, and usually, the one with an inferiority complex gives way.

Many dangers

- The species' preference for undulating meadows makes them **vulnerable not only to snow leopards and packs of wolves and stray dogs but also humans**.
- While **hunting** still remains a threat, the terrain favoured by the urial is ideal for growing crops, rearing sheep and goats, and building military and tourism infrastructure.
- All of these activities cut off urial populations from each other, leaving herds as small as 15 isolated from others.



DEFENCE & SECURITY

Military Farms Service

Context

- The Indian Army formally closed the Military Farms Service, which administered the 130 military farms all across the country.

What is the history of Military Farms and what was their role in the Indian Army?

- The first Military Farm was established in **1889 at Allahabad** by the British.
- The basic **aim** with which these farms were subsequently set up across the country was to **ensure nutritious milk supply to the troops deployed in India**.

- Role of Military Farms had expanded to **artificial insemination of cows** in 1925.
- In collaboration with the Ministry of Agriculture, the Military Farms undertook '**Project Frieswal**' **one of the largest cross-cattle breeding programmes in the country**, to produce and rear Holstein Friesian cross breed with Sahiwal breed for high milk productivity.

What is the genesis of the decision to close military farms?

- The proliferation of dairy business in the country had ensured that there is **no longer any forced dependence on Military Farms.**
- In 2016, a committee under **Lt Gen DB Shekatkar (retd)** submitted a report on reorganisation of several branches of the Army **recommended that the Military Farms be closed down.**
- The government will **save nearly Rs 280 crores per year**, which was spent on the upkeep of the farms, the cattle and for salaries to the staff.
- There is nearly 20,000 acres of land, which belongs to Military Farms throughout the country and most of it is in prized locations.

Exercise SHANTIR OGROSHENA-2021

Context

- Multinational Military Exercise SHANTIR OGROSHENA 2021 (Front Runner of the Peace) will be held at Bangladesh.

More about news

- It was held to **commemorate the birth centenary** of Bangladesh 'Father of the Nation' **Bangabandhu Sheikh Mujibur Rahman** and mark glorious 50 years of liberation.
- **Indian Army** participated in the exercise along with contingent of Royal **Bhutan Army**, **Sri Lankan Army** and **Bangladesh Army.**
- **Theme** of the exercise was "**Robust Peace Keeping Operations**".
- Military observers from USA, UK, Turkey, Kingdom of Saudi Arabia, Kuwait and Singapore also attended the exercise.

Front Hard Armour Panel (FHAP) jacket

Context

- Defence Research and Development Organisation (DRDO) lab Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur has developed **light weight Bullet Proof Jacket (BPJ)** weighing 9.0 kilogrammes, meeting the qualitative requirements of Indian Army.

About FHAP jacket

- The Front Hard Armour Panel (FHAP) jacket was tested at Terminal Ballistics Research Laboratory (TBRL), Chandigarh and **met relevant BIS standards.**
- Each gram of BPJ **weight reduction is crucial in enhancing soldier comfort** while ensuring the survivability.
- This technology **reduces the weight of the medium sized BPJ** from 10.4 to 9.0 kilogrammes.
- Very specific materials and processing technologies have been developed in the laboratories for the purpose.

About Bureau of Indian Standards (BIS)

- The Bureau of Indian Standards (BIS) is the **national Standards Body of India** working under the aegis of **Ministry of Consumer Affairs, Food & Public Distribution**, Government of India. It is established by the Bureau of Indian Standards Act, 1986.



Advanced Chaff Technology

Context

- DRDO develops Advanced Chaff Technology to safeguard naval ships from missile attack.

About Advanced Chaff Technology

- Chaff is a **passive expendable electronic countermeasure technology** used worldwide to protect naval ships from enemy's radar and Radio Frequency (RF) missile seekers.
- The importance of this development lies in the fact that **very less quantity of chaff material deployed in the air acts as decoy to deflect enemy's missiles for safety of the ships.**
- Defence Laboratory Jodhpur, a DRDO laboratory, has **indigenously developed** three variants of this critical technology –
 - **Short Range Chaff Rocket,**
 - **Medium Range Chaff Rocket and**
 - **Long Range Chaff Rocket** for meeting Indian Navy's qualitative requirements.

Significance

- The development of Advanced Chaff Technology by DRDO lab is another step towards **Atmanirbhar Bharat.**
- The DRDO has gained the expertise to meet the futuristic threats from adversaries. The technology is being given to the industry for production in large quantities.

Multi-lateral maritime exercise La Pérouse

Context

- Indian Navy Ships INS Satpura (with an integral helicopter embarked) and INS Kiltanalongwith **P8I Long Range Maritime Patrol Aircraft** are participating, for the first time; in **multi-lateral maritime exercise La Pérouse, being conducted in the Eastern Indian Ocean Region.**

More about news

- Exercise La Pérouse witnessed **advanced naval operations** including surface warfare, anti-air warfare and air defence exercises, weapon firing exercises, cross deck flying operations.
- The Indian Navy ships and aircraft will exercise at sea with ships and aircraft of **French Navy (FN), Royal Australian Navy (RAN), Japan Maritime Self Defence Force (JMSDF) and United States Navy (USN)** during the three day exercise at sea.
- The exercise showcased high levels of **synergy, coordination and inter-operability between the friendly navies.**
- Participation by the Indian Navy in the exercise demonstrates the shared values with friendly navies ensuring freedom of seas and commitment to **an open, inclusive Indo-Pacific and a rules-based international order.**

NanoSniffer

Context

- Union Education Minister launched NanoSniffer, the world's first Microsensor based Explosive Trace Detector (ETD) developed by NanoSniff Technologies, an IIT Bombay incubated startup.
- NanoSniffer is a **100% Made in India product** in terms of research, development & manufacturing.
- The core technology of NanoSniffer is protected by patents in the U.S. & Europe.
- This affordable device will reduce dependency on imported explosive trace detector devices.
- It will also encourage other institutions, startups and medium-scale industries to research & develop products indigenously. It's a perfect example of lab to market product.
- **It can detect explosives in less than 10 seconds** and it also identifies and categorizes explosives into different classes.
- It detects **all classes of military, conventional and homemade explosives.**
- NanoSniffer gives **visible & audible alerts with sunlight-readable color display.**
- NanoSniffer has successfully passed Pune based DRDO's High Energy Materials Research Laboratory (HEMRL) testing and has also been tested by the country's elite counter-terror force National Security Guard (NSG).

Need

- Given the constant threats, which our nation faces due to **geo-political realities, explosives & contraband detection** has become a norm at high security locations like airports, railways & Metro stations, hotels, malls, and other public places.

- Almost **all products for explosive detection are imported** at a high cost leading to the loss of valuable foreign exchange by the country. NanoSniffer can substitute them.

Freedom of Navigation Operations

Context

- The US Navy announced its 7th Fleet had **"asserted navigational rights and freedoms inside India's exclusive economic zone, without requesting India's prior consent"**.

What is FONOP?

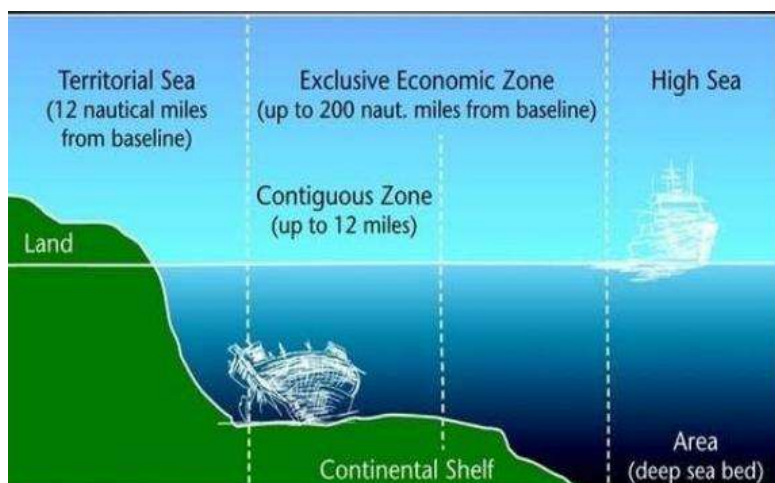
- The Freedom of Navigation Operations **involves passages conducted by the US Navy through waters claimed by coastal nations as their exclusive territory**.
- According to the US Department of Defense (DoD), the FON Program has existed for 40 years, and "continuously reaffirmed the United States' policy of exercising and asserting its navigation and overflight rights and freedoms around the world".
- While this is not the first time something like this has happened, this is the first time the US Navy has issued a public statement giving details of the operation.

US stand

- Its 7th Fleet had "asserted navigational rights and freedoms approximately 130 nautical miles west of Lakshadweep Islands, inside India's exclusive economic zone is consistent with international law".
- India requires prior consent for military exercises or maneuvers in its exclusive economic zone or continental shelf, a claim inconsistent with international law.
- Freedom of navigation operation **"FONOP" upheld the rights, freedoms, and lawful uses of the sea** recognized in international law, thus challenging India's excessive maritime claims.

India's stand

- The UN Convention on the Law of the Sea (UNCLOS) **does not authorize other States** to carry out in the Exclusive Economic Zone and on the continental shelf, **military exercises or manoeuvres, in particular those involving the use of weapons or explosives, without the consent of the coastal state**.



7TH FLEET:

- It is the largest of the US Navy's forward deployed fleets. India had a close encounter with the 7th fleet during the 1971 war with Pakistan.

EEZ:

- According to UNCLOS, the EEZ **"is an area beyond and adjacent to the territorial sea, subject to the specific legal regime"** under which "the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provisions of this Convention.
- As per India's **Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976**, the EEZ of India **"is an area beyond and adjacent to the territorial waters, and the limit of such zone is two hundred nautical miles from the baseline"**.
- India's **"limit of the territorial waters is the line every point of which is at a distance of twelve nautical miles from the nearest point of the appropriate baseline"**.
- Under the 1976 law, **"all foreign ships (other than warships including sub-marines and other underwater vehicles) shall enjoy the right of innocent passage through the territorial waters"**, innocent passage being one that is **"not prejudicial to the peace, good order or security of India"**.

Terror funding

Context

- In an important ruling, the Supreme Court said **paying extortion money to terror groups to carry on business activities smoothly could not be termed as funding terror organizations** and granted bail to a Jharkhand coal transporter who had paid huge amounts to the TiritiyaPrastuti Committee (TPC), a breakaway faction of the CPI (Maoist).
- The SC said paying extortion money and meeting members of a terrorist organisation for that purpose **could not implicate a person as a conspirator for raising funds for the unlawful organisation.**

About Money laundering

- "Money laundering" is the process by which proceeds from a criminal activity are disguised to conceal their illicit origin.
- More precisely, according to the **Vienna Convention and the Palermo Convention** provisions on money laundering, it may encompass three distinct, alternative actus reus:
 - the conversion or transfer, knowing that such property is the proceeds of crime
 - the concealment or disguise of the true nature, source, location, disposition, movement or ownership of or rights with respect to property, knowing that such property is the proceeds of crime; and
 - the acquisition, possession or use of property, knowing, at the time of the receipt, that such property is the proceeds of crime.

FATF

- Financial Action Task Force (FATF), which is a 33-member organization with primary responsibility for **developing a world-wide standard for anti-money laundering and combating the financing of terrorism.**

ALH MK III

Context

- Indian Naval Air Squadron (INAS) 323, the first unit of the **indigenously built ALH Mk III aircraft**, commissioned into the Indian Navy.
- It marked another milestone in the efforts towards **enhancing maritime security and safeguarding maritime interests** of the nation.

About ALH Mk III aircraft

- It is a multirole helicopter with Shakti engine manufactured by Hindustan Aeronautics Limited (HAL).
- The Mk III version of the ALH has an all glass cockpit and will be used for Search and Rescue, Special Operations and Coastal Surveillance.



Cyber Crime Volunteers Program

Context

- The Ministry of Home Affairs (MHA) has said it **does not maintain a centralised list of volunteers enrolled under the cybercrime volunteer programme** since police is a "State subject" under the Seventh Schedule of the Constitution.

Cyber Crime Volunteers Program

- The MHA, through its cybercrime grievance portal, **cybercrime.gov.in**, aims to raise a group of "cybercrime volunteers" to flag "unlawful content" on the Internet.
- The volunteer programme is supposed to **act as a facilitative tool between ordinary citizens and the government for the prevention of cybercrime.**

- Any citizen can register himself/herself under one of three categories: 'Cyber Volunteer Unlawful Content Flagger', 'Cyber Awareness Promoter', and 'Cyber Expert'.
- Post-registration, the individual can directly report "unlawful content" being circulated over the Internet, which presumably includes social media platforms like Facebook, Instagram and Twitter, among others.
- The Cyber Crime Volunteer Framework has been rolled out as a part of cyber hygiene promotion to bring together citizens to contribute in the fight against cybercrime in the country and assist State/UT LEAs in their endeavour to curb cybercrimes.
- The volunteers are registered, and their services utilized, by the respective State/UT LEAs as per their requirement.
- Indian Cyber Crime Coordination Centre (I4C) has been established under Ministry of Home affairs (MHA) to act as a nodal point at National level in the fight against cybercrime.
- It aims to provide a platform to deal with cybercrimes in a coordinated and comprehensive manner.
- One of the important objectives of I4C is to create ecosystem that brings together academia, industry, public and government in prevention, detection, investigation and prosecution of cybercrimes.
- I4C has envisaged the Cyber Crime Volunteers Program to bring together citizens with passion to serve the nation on a single platform and contribute in fight against cybercrime in the country.
- Good Samaritans are welcome to register as Cyber Crime Volunteers in the role of Unlawful Content Flaggers for facilitating law enforcement agencies in identifying, reporting and removal of illegal / unlawful online content.

Single Crystal Blades for helicopter engine

Context

- Defence Research and Development Organisation (DRDO) has developed single crystal blades technology and supplied 60 of these blades to Hindustan Aeronautics Limited (HAL) as part of their **indigenous helicopter development program** for helicopter engine application.
- It is part of a program taken up by Defence Metallurgical Research Laboratory (DMRL), a premium laboratory of DRDO, to develop five sets (300 in number) of single crystal high pressure turbine (HPT) blades using a nickel-based super alloy.
- The supply of remaining four sets will be completed in due course.

Single Crystal Blades

- Helicopters used in **strategic and defence applications** need compact and powerful aero-engines for their reliable operation at extreme conditions.
- To achieve this, state-of-the-art Single Crystal Blades having complex shape and geometry, manufactured out of **Nickel based super alloys** capable of **withstanding high temperatures of operation** are used.
- Very few countries in the world such as **USA, UK, France and Russia** have the capability to design and manufacture such **Single Crystal (SX) components**.
- Special ceramic composition had to be formulated for making strong ceramic moulds which can withstand metallostatic pressure of liquid CMSX-4 alloy at 1500°C and above during casting operation.
- The challenge of maintaining the required temperature gradient has also been overcome by optimising the casting parameters.
- A multi-step vacuum solutionising heat treatment schedule for complex CMSX-4 superalloy to achieve the required microstructure and mechanical properties has also been established.
- Further, a stringent non-destructive evaluation (NDE) methodology for the blades along with the technique for determining their crystallographic orientations has been developed.

Exercise Varuna – 2021

Context

- The 19th edition of the Indian and French Navy bilateral exercise 'VARUNA-2021' is conducted in the Arabian Sea.
- From the Indian Navy's side, guided missile stealth destroyer INS Kolkata, guided missile frigates INS Tarkash and INS Talwar, Fleet Support Ship INS Deepak, with Seaking 42B and Chetak integral helicopters, a Kalvari class submarine and P8I Long Range Maritime Patrol Aircraft, participated in the exercise.
- The three day exercise witness high tempo-naval operations at sea, including advanced air defence and anti-submarine exercises, intense fixed and rotary wing flying operations, tactical manoeuvres, surface and anti-air weapon firings, underway replenishment and other maritime security operations.
- Units of both navies endeavoured to **enhance and hone their war-fighting skills to demonstrate their ability as an integrated force to promote peace, security and stability in the maritime domain.**
- VARUNA-21 highlights growing bonhomie and showcases increased levels of synergy, coordination and interoperability between the two friendly navies.
- These interactions further underscore the shared values as partner navies, in ensuring freedom of seas and commitment to an open, inclusive Indo-Pacific and a rules-based international order.

SIPRI Report 2020

Context

- India was the third largest military spender in the world in 2020, behind only the US and China according to the latest military expenditure database published by the **Stockholm International Peace Research Institute.**

Key Findings

- It tracks military expenditure and arms trade globally.
- The US accounted for 39 per cent of the money spent on military globally, China accounted for 13 per cent, and India accounted for 3.7 per cent of the globe's share.
- The US spent a total of \$778 billion in 2020, China spent \$252 billion and India's military expenditure was \$72.9 billion.
- All three countries saw their military spending go up** compared to 2019, even during a pandemic year.
- From **2011 to 2020**, American military expenditure dropped by 10 per cent, but China saw a 76 per cent growth while **India's military spending grew by 34 per cent.**
- The other top spenders included Russia with \$61.7 billion, the UK at \$59.2 billion, Saudi Arabia at \$57.5 billion, followed by Germany and France at just under \$53 billion each.



About Stockholm International Peace Research Institute

- SIPRI is an **independent international institute** dedicated to research into conflict, armaments, arms control and disarmament.
- Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

Joint logistics facility

Context

- **Chief of Defence Staff** e-released Standing Operating Procedure of Joint Logistics Node (JLN) in Mumbai, through video conferencing from New Delhi.

Need

- As part of measures to **boost tri-service integration and resource optimisation**.
- These JLN's will provide integrated logistics cover to the armed forces for their small arms ammunition, rations, fuel, general stores, civil hired transport, aviation clothing, spares and also engineering support in an effort to synergise their operational efforts.
- The initiative would accrue advantages in terms of **saving of manpower, economize utilisation of resources, besides financial savings**.
- "Establishment and operationalisation of JLN's is a very important first step in the direction of logistics integration of our three Services.
- Acceptance of each other's limitations and learning from each other's strengths and best practices is essential to help improve the functioning and efficacy of these nodes,"
- The government sanction letter for the establishment of the JLN's in Mumbai, Guwahati and Port Blair was signed on October 12, 2020.
- Subsequently, the JLN's in Guwahati and Tri-Services, Andaman and Nicobar Command, Port Blair, were operationalised on January 01, 2021.

About Chief of Defence Staff



Python-5 air to air missile

Context

- Set of trials, extensive missile carriage flight tests were conducted at Bengaluru to assess integration of Python-5 missile with aircraft systems on board Tejas, like Avionics, fire-control radar, missile weapon delivery system and flight control system.
- India's Indigenous Light Combat Aircraft Tejas has added capability of **firing Israeli-origin Python-5 air-to-air missile (AAM)** after successful tests that concluded.
- These set of tests were aimed to **validate the enhanced capability of the already integrated Israeli-origin Derby beyond visual range AAM on Tejas**.
- The test firing at Goa completed a series of missile trials to validate the performance under extremely challenging scenarios.
- The Derby missile achieved direct hit on a high-speed manoeuvring aerial target and Python missiles also achieved 100 per cent hits, thereby validating their complete capability.



1. Consider the following statements regarding Sunga Dynasty:

1. Its capital was Pataliputra.
2. Pushyamitra Sunga killed Sanskrit grammarian Patanjali.
3. Pushyamitra Sunga is the hero of Kalidasa's poem, Malavikagnimitram.

Which of the statements given above is/are correct?

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

2. Consider the following statements regarding Later Vedic Period:

1. Hereditary kingship started emerging in the later vedic period.
2. Importance of rituals like Rajasuya and Asvamedha decreased in this period.

Which of the statements given above is/are incorrect?

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

3. Consider the following statements regarding Gender Gap Index 2021:

1. It is published by WEF.
2. India has ranked 140th in the 2021 index.
3. In south asia, only Nepal and Pakistan are ranked below India.

Which of the statements given above is/are correct?

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

4. Consider the following statements regarding Warren Hasting:

1. First Anglo-Maratha war and First Anglo-Mysore war was fought under him.
2. He abolished the Dual System of Administration.
3. He abolished the system of dastaks.

Which of the statements given above is/are correct?

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

5. Consider the following statements regarding land Revenue system in India:

1. In the Mahalwari System, cultivators are regarded as owners of land.
2. Mahal was constituted by 1 or more villages.

Which of the statements given above is/are correct?

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

6. Consider the following statements regarding Star campaigner in Elections:

1. ECI can take away the star campaigner status of a candidate.
2. All registered parties can field a maximum of 40 star campaigners.

Which of the statements given above is/are correct?

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

7. Consider the following statements regarding Central Reserve Police Force:

1. It was originally constituted as the Crown Representative Police in 1939.
2. It is headed by a brigadier ranked army official.

Which of the statements given above is/are correct?

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

8. Consider the following statements regarding National Policy for Rare Diseases:

1. It will cover about 40 percent of the population who are eligible under the Pradhan Mantri Jan Arogya Yojana.
2. It has a provision for one-time treatment that will have the financial support of up to Rs 20 lakh.

Which of the statements given above is/are correct?

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

9. Consider the following statements regarding President of India:

1. Election of the President is conducted under an open ballot system.
2. A candidate should qualify the conditions to be elected as a member of the Rajya Sabha to be elected as President.

Which of the statements given above is/are correct?

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

10. Consider the following statements regarding Comptroller and Auditor General of India:

1. It has the power of both Comptroller as well as Auditor General.
2. The CAG can be removed only on an address from both houses of parliament.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2

11. Consider the following statements regarding National Security Act of 1980:

1. The maximum period of detention is 12 months.
2. Article 22 of the Constitution allows for preventive detention.
3. It empowers only the Central government to detain a person.

Which of the statements given above is/are correct?

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

12. Consider the following statements regarding Doppler Shift:

1. When an object moves away from us, the light is shifted to the red end of the spectrum.
2. Edwin Hubble was the first to describe the galactic redshift.

Which of the statements given above is/are correct?

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

13. Consider the following statements regarding Wolf-Rayet stars:

1. They are smaller than the Sun.
2. Fusion of Helium occurs in the core.

Which of the statements given above is/are correct?

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

14. Consider the following statements regarding Supercomputers in India:

1. PARAM Shivay has achieved global ranking of 62 in TOP 500 most powerful supercomputer systems in the world.
2. Phase III of the National Supercomputing Mission will take the computing speed to around 45 Petaflops.

Which of the statements given above is/are correct?

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

15. Consider the following statements regarding Central Vigilance Commission (CVC):

1. It is an independent body responsible only to the Parliament.
2. Central Vigilance Commissioner has a term of 4 years or 65 years, whichever is earlier.

3. Central Vigilance Commissioner can be removed for proved misbehaviour or incapacity

Which of the statements given above is/are correct?

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

16. Consider the following statements regarding Battle of Plassey:

1. Rai Durlabh was an influential banker who conspired against Nawab Siraj-Ud-Daulah.
2. The Battle of Plassey was fought on the banks of Hoogly River.

Which of the statements given above is/are correct?

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

17. Consider the following statements regarding Alkaloids:

1. They contain nitrogen atoms in their structures.
2. Morphine is an Alkaloids used for the relief of pain.

Which of the statements given above is/are correct?

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

18. Consider the following statements regarding National Programme on High Efficiency Solar PV Modules:

1. The scheme was proposed by the Ministry of New & Renewable Energy.
2. It aims to reduce import dependence.

Which of the statements given above is/are correct?

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

19. Consider the following statements regarding Stubble Burning:

1. It is a crime under IPC.
2. It destroys weeds and kills pests.

Which of the statements given above is/are correct?

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

20. Consider the following statements regarding E9 Initiative:

1. India, China, Pakistan - all are its members.
2. It is related to SDG 4.

Which of the statements given above is/are correct?

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

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

21. Consider the following statements regarding Central Electricity Regulatory Commission:

1. It is a statutory body functioning under Electricity Act 2003.
2. It can regulate the tariff of Power Generating companies

Which of the statements given above is/are correct?

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

22. Consider the following statements regarding Electoral Reforms in India:

1. Exit poll results can be broadcasted only after the final phase of the elections are over.
2. 25th March is celebrated as 'National Voters Day'.

Which of the statements given above is/are correct?

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

23. Consider the following statements regarding citizenship in India:

1. OCI Card provided multiple entry lifelong visas for visiting India.
2. Citizenship status can be renounced if a person adopts foreign citizenship.

Which of the statements given above is/are correct?

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

24. Consider the following statements regarding Muon g-2:

1. It was conducted at the US Department of Energy's Fermi National Accelerator Laboratory.
2. This experiment proves the Standard Model.

Which of the statements given above is/are correct?

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

25. Consider the following statements regarding NanoSniffer:

1. It is developed by an incubator based on IIT Madras.
2. It detects all classes of military, conventional and homemade explosives.

Which of the statements given above is/are correct?

26. Consider the following statements regarding Jyotirao Phule:

1. His memorial is built in Pune, Maharashtra.
2. Satyashodhak Samaj in 1848 to improve the status of lower castes.

Which of the statements given above is/are correct?

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

27. Consider the following statements regarding Exclusive Economic Zone:

1. It can extend to a maximum of 200 nautical miles from the baseline.
2. EEZ does not include the territorial sea and contiguous zone.

Which of the statements given above is/are correct?

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

28. Consider the following statements regarding Consumer Price Index:

1. CPI for Industrial Workers is calculated by the National Statistical Office (NSO).
2. CPI for Agricultural and Rural labourers is released once every quarter.

Which of the statements given above is/are correct?

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

29. Consider the following statements regarding Foreign Exchange Management Act, 1999 (FEMA):

1. It is enforced by the Enforcement Directorate.
2. This act makes offences related to foreign exchange civil offenses

Which of the statements given above is/are correct?

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

30. Consider the following statements regarding Adiabatic Lapse Rate:

1. It is the rate of fall in temperature of the atmosphere with elevation.
2. The dry adiabatic lapse rate for the Earth's atmosphere equals 4° C per kilometre.

Which of the statements given above is/are correct?

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

31. Consider the following statements regarding Pressure Belts:

1. Doldrums lie between 10°N and 10°S latitudes.
2. Pressure belts shift northwards during summer in the northern hemisphere.

Which of the statements given above is/are correct?

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

32. Consider the following statements regarding Indian Rhino Vision 2020:

1. It aims to achieve a wild population of at least 3,000 greater one-horned rhinos in India by 2020.
2. All biosphere reserves of India are part of this initiative.

Which of the statements given above is/are correct?

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

33. Consider the following statements regarding Monetary policy tools in India:

1. In Repo Agreements, banks pay interest to RBI.
2. Reverse Repo takes money out of the system.

Which of the statements given above is/are correct?

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

34. Consider the following statements regarding Gross National Product(GNP):

1. GNP is measured at factor cost.
2. It includes all the goods and services produced by residents of a country working in the country or abroad.

Which of the statements given above is/are correct?

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

35. Consider the following statements regarding Human Development Index :

1. Life expectancy at birth is calculated to measure healthy life.
2. India is classified in the low development category.

Which of the statements given above is/are correct?

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

36. Consider the following statements regarding Raisina Dialogue:

1. It is held annually in New Delhi.
2. It is hosted by the Observer Research Foundation, an independent think tank.

Which of the statements given above is/are correct?

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

37. Consider the following statements regarding Sputnik V:

1. It uses 2 different viruses and different vectors for each shot.
2. Two shots are given at an interval of 45 days.
3. It can only be stored at -18°C.

Which of the statements given above is/are correct?

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

38. Consider the following statements regarding First Carnatic War:

1. It started with the War of Austrian Succession.
2. Dupleix was called back to France because of criticism of this war.

Which of the statements given above is/are correct?

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

39. Consider the following statements regarding Salt Satyagraha:

1. Lord Irwin was the viceroy during this event.
2. K Kelappan led a march in the Malabar region.
3. C Rajagopalachari led the march in Tamil Nadu.

Which of the statements given above is/are correct?

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

40. Consider the following statements regarding Azad Hind Fauj:

1. The first INA was formed under SC Bose.
2. It won the Battle of Imphal and Battle of Kohima

Which of the statements given above is/are incorrect?

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

41. Consider the following statements regarding Deen Dayal Upadhyaya Kaushalya Yojana:

1. It was started by the Ministry of Skill Development.

2. It uses skill training and placement in wage employment as a tool to diversify income.

Which of the statements given above is/are correct?

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

42. Consider the following statements regarding Dolphins:

1. Irrawaddy Dolphin is categorized as Critically Endangered in IUCN Red List.
2. Dolphin population has doubled in Chilka Lake since last year.

Which of the statements given above is/are correct?

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

43. Consider the following statements regarding Mughal Empire:

1. Ibrahim Lodhi invited Babur to help him against Daultat Khan.
2. Babur sent Humayun to seize Agra.

Which of the statements given above is/are correct?

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

44. Consider the following statements regarding Bahmani Kingdom:

1. Muhammad Shah-I as the founder of the Bahmani Kingdom.
2. Golgumbaz in Bijapur is called the whispering gallery.

Which of the statements given above is/are incorrect?

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

45. Consider the following statements regarding Ala-ud-din Khilji:

1. Ala-ud-din followed the Divine Right Theory of Kingship.
2. He was against free grants of lands.
3. He introduced a permanent standing army.

Which of the statements given above is/are correct?

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

46. Consider the following statements regarding National Internet Exchange of India:

1. It is registered under Indian Societies Registration Act of 1860.

2. NIXI manages the National Internet Registry of the country delegation Internet Protocol addresses.

Which of the statements given above is/are correct?

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

47. Consider the following statements regarding National Startup Advisory Council:

1. It has been constituted by NITI Aayog.
2. It aims to build a strong ecosystem to nurture innovation.

Which of the statements given above is/are correct?

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

48. Consider the following statements regarding Multisystem Inflammatory Syndrome in Children (MIS-C):

1. It occurs 2-6 weeks after a Covid-19 infection.
2. The syndrome is related to a surge of inflammation triggered by an immune response to the virus.

Which of the statements given above is/are correct?

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

49. Consider the following statements regarding Bills in Parliament:

1. There is no provision of Joint Sitting of both the House in case of a Money Bill.
2. Joint Sitting is possible in case of deadlock in Constitutional Amendment Bill.

Which of the statements given above is/are correct?

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

50. Consider the following statements regarding Writs in India:

1. Writ of Certiorari can only be issued against judicial and quasi-judicial authorities and not against administrative authorities.
2. Quo warranto cannot be issued against a private or ministerial office.

Which of the statements given above is/are correct?

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

51. Consider the following statements regarding River Dhamra:

1. It is formed by the confluence of the Brahmani and Baitarani rivers.
 2. Gahirmatha sanctuary is found near its mouth.
- Which of the statements given above is/are correct?

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

52. Consider the following statements regarding Van Dhan Vikas Yojana:

1. 10 Self Help Groups of 30 Tribal gatherers is constituted under this scheme.
2. The Ministry of Skill Development is the Nodal Ministry at the Central Level.
3. It aims at providing skill upgradation and capacity building training.

Which of the statements given above is/are correct?

a) 1 and 3 only b) 2 and 3 only
c) All are correct d) 1 and 2 only

53. Consider the following statements regarding Great Indian Bustards:

1. It has been categorized as Critically Endangered.
2. It has only been found in Rajasthan and Gujrat.

Which of the statements given above is/are correct?

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

54. Consider the following statements regarding Lingaraj Temple:

1. It is built of Red Stone.
 2. Bindusagar Lake is located near the temple.
 3. It was built by the Somvanshi King Yayati I.
- Which of the statements given above is/are correct?

a) 1 and 3 only b) All of the above
c) 1 and 2 only d) 2 and 3 only

55. Consider the following statements regarding soils:

1. Black soil has poor water retaining capacity. Sand has high organic content.
2. Laterite Soil is suitable for cultivation of rice, ragi, sugarcane, and cashew nuts.

Which of the statements given above is/are correct?

a) 1 and 2 only b) 3 only
c) 1 and 3 only d) All of the above

56. Consider the following statements regarding Gangaikondacholapuram:

1. The city was founded by Rajendra Chola I.
2. The city marked the victory over Cheras.
3. Famous Brihadisvara temple is located in this city.

Which of the statements given above is/are correct?

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

57. Consider the following statements regarding Inflation:

1. Inflation rises with more than 10% in Trotting Inflation.
2. Increase in wages lead to Cost Push Inflation.

Which of the statements given above is/are correct?

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

58. Consider the following statements regarding Reserve Bank of India:

1. It was established in 1935 under the Government of India Act, 1935.
2. The Monetary Policy Committee is headed by the RBI Governor.

Which of the statements given above is/are correct?

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

59. Consider the following statements regarding Finance Commission:

1. Members of the commission are appointed by the President.
2. Tenure of the members is fixed by the constitution.
3. Members are not eligible for reappointment.

Which of the statements given above is/are correct?

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

60. Consider the following statements regarding ALH Mk III aircraft:

1. It is manufactured by Hindustan Aeronautics Limited.
2. It is a multirole helicopter with Shakti Engine.

Which of the statements given above is/are incorrect?

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

ANSWERS

1. d	2. d	3. a	4. b	5. b	6. d	7. a	8. c	9. d	10. b
11. a	12. c	13. b	14. b	15. d	16. d	17. c	18. c	19. c	20. c
21. c	22. a	23. a	24. a	25. b	26. c	27. a	28. d	29. c	30. a
31. c	32. d	33. d	34. b	35. a	36. c	37. c	38. a	39. d	40. c
41. b	42. b	43. b	44. a	45. d	46. b	47. b	48. c	49. a	50. b
51. c	52. a	53. a	54. b	55. b	56. d	57. b	58. c	59. d	60. d

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