



TRANSFORM IAS
Transforming Lives with Education

CURRENT AFFAIRS MAGAZINE March - 2023



PHONE NO : 9986526271 , 9739804283
Website : www.transformiasacademy.com

-: ADDRESS :-
17, Kammanahalli Main Rd, above liberty showroom,
near Nandana Hotel,



TRANSFORM IAS
Transforming Lives with Education

March- 2023

Current Affairs

Contents

Contents	Page No.
ART AND CULTURE	1-9
<ul style="list-style-type: none">• 13th century temple built by Kayasthas unearthed• 1,300-yr-old Buddhist Stupa discovered in Odisha• A hidden corridor discovered near 4,500-year-old Great Pyramid of Giza• Sisupalgarh- a fortified historic city is in danger• DC-3 'Dakota' aircraft of Biju Patnaik• Attukal Pongala• Why in News• Pritzker Prize 2023• Vaikom Satyagraha• Cheti Chand 2023	
POLITY & GOVERNANCE	10-24
<ul style="list-style-type: none">• Provisions for summoning the legislative assembly• Centre suspends FCRA license of the Centre for Policy Research (CPR)• Supreme Court of India verdict on ECI appointments• Old Pension Scheme vs New Pension Scheme• Supreme Court eases norm for appointment of consumer court presidents, members• Linking PAN with Aadhaar is mandatory• Women's Reservation Bill• First Edition of Women Icons Leading Swacchata (WINS) Awards 2023• Pre-arrest bail• Rajasthan govt proposes a Bill to protect advocates• Why in News• Double Jeopardy• National Security Act, 1980• Muslim Personal Law (Shariat) Application Act, 1937	
ENVIRONMENT AND ECOLOGY	25-39
<ul style="list-style-type: none">• IEA's annual Methane Global Tracker report• Clean Plant Program• Cultural burns by indigenous Australians• 151st anniversary of Yellowstone National Park• World Wildlife Day (WWD) 2023• Constitution of Greater Panna Landscape Council (GPLC)• Certification of Forests• Migration of great seahorses	

- Hot lightning
- India to launch International Big Cat Alliance (IBCA)
- ISRO's Landslide Atlas of India
- Africa's rift valley could give birth to a new ocean
- Jhamarkotra and Zavar: geoheritage sites of India
- Synthesis Report by IPCC
- Active volcano found on Venus
- Possibility of aliens hiding in special 'terminator zones'

ECONOMY

40-47

- INDIAN ECONOMY
- SWAYATT
- Hallmark Unique Identification(HUID) number
- Har Payment Digital mission of RBI
- SEBI issues framework for the adoption of cloud services
- Finance Ministry brings Crypto assets under Prevention of Money Laundering Act
- Mundra Petrochemical project
- AT1 bonds
- IMF
- Impact of Fed rate on the Economy
- GST Appellate Tribunal (GSTAT)

SCIENCE AND TECHNOLOGY

48-62

- Kerala Becomes First State to Clean Manholes with Robot Scavengers
- Organ on a Chip
- Mad cow disease
- AIIMS Facial Toolbox for Emotions Recognition
- H3 N2 Influenza
- Lewis super-acid
- Establishing time zone for the moon
- NISAR observation satellite
- Effective treatment for severe scrub typhus identified
- GPT-4
- India's first indigenous quadruped (four-legged) robot
- NASA's new space suit
- Laccase enzyme
- LVM-3
- Asia's largest four metre International Liquid Mirror Telescope
- Ceramic Radomes
- Vision document for rollout of 6G network in India
- Biotransformation technology

SOCIAL ISSUES

63-71

- Compassion Fatigue
- Protected forests of Buxwaha
- Why in News
- World Bank's Women, Business and the Law report 2023
- Regulation of synthetic colours & other colours in India
- Kinzhal & Zircon hypersonic missiles
- Forest loss- India 2nd highest globally

- World Happiness Report 2023
- Rajasthan Right to Health Bill
- Ocean desalination as a solution to water crisis
- Government launches National Rabies Control Programme (NRCP)

INTERNATIONAL RELATION

72-80

- Windsor Framework replaces Northern Ireland Protocol
- Fab 4 Chip Alliance
- Iran claims to have unearthed massive lithium deposit
- Australia-India education qualification recognition mechanism
- International Criminal Court
- Vienna Convention on Diplomatic Relations
- Nepal-India Literature Festival
- India-Japan
- Uganda makes it a crime to identify as LGBTQ

GOVERNMENT SCHEME

81-84

- New Global Greenhouse Gas Monitoring Infrastructure
- Price Day Ahead Market and Surplus Power Portal (PUSHp)
- PM Vishwakarma Kaushal Samman (PM VIKAS)
- Research, Education and Training Outreach (REACHOUT) for capacity building
- Unnathi programme launched during silver jubilee of Kudumbashree
- Jharniyojan portal of Jharkhand

MISCELLANEOUS

85-91

- Porter Prize 2023
- One Nation One Challan
- Whiskey fungus
- Country Reports on Terrorism 2021: India
- Hasdeo movement
- Global Terrorism Index(GTI)
- Low-Temperature Thermal Desalination (LTTD) technology
- Existence of Zealandia confirmed
- C-Veda project
- Why in News
- World Women Boxing Championship 2023

13th century temple built by Kayasthas unearthed

Why in News

13 th-century Hindu temple ruins have been recently unearthed amidst a shrub jungle northeast of the Durga temple, atop a hillock in the Pushpagiri Kshetram of Vallur mandal in Kadapa district of Andhra Pradesh.

Important Points

Pushpagiri/Pushpachala

- The hillock, also known as Pushpachala, is famous for the chain of temples dedicated to the pantheon of Hindu gods such as Chennakesava, Umamaheswara, Rudrapada, Vishnupada, Trikooteswara, Vaidyanatha, Subrahmanya, Vighneswara and Durga Devi.
- With the river Penna flowing southwest, this hilly region has over a hundred small and big temples in its vicinity.
- Pushpagiri is referred to as Hari-Hara Kshetra, as there are a number of temples dedicated to both Shiva and Vishnu.
- The Pushpeswara Swamy shrine is revered as a self-manifested idol, which can be found from Mackenzie local record No. 1211.
- The architectural features of the ruins reveal a style which is contemporary to a temple at Vallur, built by the Kayastha rulers in the 13 th Century AD.
- The structure in ruins came to light when a team guided by Sri Vidyasankara Bharathi, the pontiff of Pushpagiri Peetham, visited the area ahead of launching a 'Giri Pradakshina', a sacred trek perambulating the hill, as a form of fulfilment of a vow.
- According to historians, the images on the stone panel depicting the king and his two queens could also be identified with Kayastha Ambadeva.
- The temple was damaged over time by treasure hunters, as indicated by the pulling out of the consecrated idols. Heritage enthusiasts want the shrub jungle cleared and the dilapidated structure revived.



About Kayasthas

- The Kayasthas, including the great Ambadeva, were subordinates to the rulers of the Kakatiya dynasty.
- They ruled the region with Vallur as the capital.
- The founder of this dynasty was Gangaya Sahini (1239-1257 AD.)
- He was a subordinate ruler of Kakatiya Ganapatideva.
- His kingdom covered the regions of Palnadu, Kadapa and Panagallu of Nalgonda district.

1,300-yr-old Buddhist Stupa discovered in Odisha

Why in News

The Archaeological Survey of India (ASI) stumbled upon a 1,300-year-old stupa right in the middle of a mining site in Odisha's Jajpur district recently.

Important Points

- A 4.5-metre tall stupa belonging to the 7 th or 8 th century was discovered.
- It is from this place that Khondalite stones were supplied for the beautification project around the 12 th Century Shree Jagannath Temple in Puri.

- The archaeological asset was found at Parabhadi which is situated near Lalitagiri, a major Buddhist complex, having a large number of stupas and monasteries.
- Lalitagiri is a major Buddhist complex in the Indian state of Odisha.
- The complex is home to stupas, 'esoteric' Buddha images, and monasteries, which is the oldest site in the region.
- Significant finds at this complex include Buddha's relics. Tantric Buddhism was practiced at this site.



Khondalite stones mining

- Khondalite stones were widely used in ancient temple complexes.
- After discovery of the Buddhist stupa from the mining site, the ASI intervened and asked Odisha government to stop mining through its Odisha Mining Corporation (OMC). The mining has since stopped.
- The State government had come up with an ambitious plan to spend 3,208 crore under the Augmentation of Basic Amenities and Development of Heritage and Architecture (ABADHA) scheme in three years to transform Puri into a world heritage city.
- Khondalite stones are proposed to be used widely to maintain aesthetic value of some projects such as heritage security zone, Jagannath Ballav pilgrim centre, Puri lake development project, Atharnala heritage project and Matha Development Initiative.
- Sukhuapada was the biggest of six Khondalite stone blocks reserved for OMC.

About Khondalite

- Khondalite is a foliated metamorphic rock.
- In India, it is also called Bezwada Gneiss and Kailasa Gneiss.
- Khondalite is mainly composed of feldspar, quartz, and mica, and has a distinct pinkish-grey coloration. It
- It was named after the Khond tribe of Odisha and Andhra Pradesh because well-formed examples of the rock were found in the inhabited hills of these regions of eastern India.

A hidden corridor discovered near 4,500-year-old Great Pyramid of Giza

Why in News

A hidden corridor, 9 m long and roughly 2 m wide, has been unearthed by scientists close to the main entrance of the 4,500-year-old Great Pyramid of Giza in Egypt.

Important Points

- The tourists' entrance used today is the passage dug by the Abbasid Caliph al-Ma'mun's men in the Middle Ages, located at the intersection of the Descending and Ascending Corridors.
- Scientists detected an empty space behind the northern face of the Great Pyramid, about 7 m above this entrance.
- Marked on the outside with a stone slab with a gabled chevron structure, scientists have now confirmed the presence of a hidden corridor behind it.
- The initial discovery of a void was made using a imaging technique known as cosmic-ray muon radiography.
- This method uses the penetrative power of cosmic subatomic particles called muons to scan large structures.
- A muon detector tracks the number of muons going through the object from different directions, to form a three-dimensional image.



- The discovery was originally made by the ScanPyramids project in 2016 using a non-invasive technique called cosmic-ray muon radiography.

The importance of the discovery

- ScanPyramids, initiated in 2015, is an international project that uses various high-tech instruments employing non-invasive infrared thermography, ultrasound, 3D simulations and cosmic-ray radiography to study the structures.
- For the longest time, experts have known that many secrets hide behind the thick walls in often physically inaccessible places.

The Great Pyramid of Giza

- It is the largest of the three pyramids in Giza, originally standing roughly 147 m above the Giza plateau.
- Construction was started in circa 2550 BC, during the reign of Khufu, often considered the greatest pharaoh of Egypt's old kingdom.
- It is estimated that the pyramid was built using 2.5 million stone blocks, each weighing between 2.5 and 15 tonnes.
- Building the Great Pyramid was a feat of engineering unmatched for thousands of years.
- Of note is not only the scale of the building – it was the tallest structure on the planet until the main spire of the Lincoln Cathedral in the United Kingdom overtook it in 1400 AD – but also its symmetry and perfect alignment to the four cardinal directions (the error is less than 1/15th of a degree).
- Greek historian Herodotus wrote about it glowingly in the 5th century BC, Arab travellers in the middle ages described and measured the structure with remarkable accuracy, and Napoleon Bonaparte, during his Nile expedition of 1798, spent days at Giza with a team of scholars and scientists, ostensibly starting the modern field of Egyptology as we know it.
- But as interesting as the Great Pyramid's towering presence is, perhaps of even greater fascination are its inner secrets – passages and chambers hiding many mysteries, some still untouched, others found and long forgotten, and many currently accessible.
- Khufu's pyramid contains by far the most elaborate system of passages and chambers concealed within any pyramid.
- This is the only one of the 35 such tombs constructed between 2630 and 1750 BC to contain tunnels and vaults well above ground level – most others either have a chamber at the ground level or well below it with the structures being completely solid inside
- This has meant that the Great Pyramid hides within it a world unto itself which has attracted treasure hunters and scholars of Egypt's antiquity alike.
- While there is no consensus on who first entered the tomb after it was sealed in about 2566 BC, accounts as far back as that of Herodotus (445 BC) imply that at least some passages inside the pyramid had already been opened and explored in antiquity itself.
- There are two distinct tunnel systems inside the Great Pyramid – the Descending Passage (described by Greeks like Herodotus) and the Ascending Passage (more hidden, opened by the Arabs as recently as the 9th century).

Sisupalgarh- a fortified historic city is in danger

Why in News

Land sharks armed with heavy earth-moving equipment have damaged a portion of the wall of the fortified ancient city of Sisupalgarh in Odisha.

Important Points

Sisupalgarh

- Sisupalgarh or Sisupalagada is situated in Khurda District in Odisha, India and houses ruined fortifications.
- It used to be the capital of ancient Kalinga. It is identified with Kalinganagara of Kharavela and Tosali of Ashoka.
- It is one of the largest and best preserved early historic fortifications in India, with the earliest occupation both inside and outside the later site's northern rampart around 7th to 6th centuries BCE.

- This is the only fortified site in India having eight gateways.
- On the basis of the architectural pattern and artefacts discovered during the early excavations, B.B. Lal concluded that this fort city flourished between 3rd century BC and 4th century AD.
- On the basis of the new findings, M.L. Smith and R. Mohanty claimed in 2001 that the fortified city flourished from around 5th century BC and probably lasted well after the 4th century.
- Thus, this defensive settlement originated prior to the Mauryan empire.
- The excavation of the Sisupalgarh site was first taken up in 1948, when it was declared a Centrally Protected Monument under the provisions of the Ancient Monuments Preservation Act, 1904, involving an area measuring 562.681 acres and covering five villages in 1950.
- During its excavation, archaeologists were surprised to find architectural and engineering marvels of the fortified city.
- The urban centre had an area of 1.2 km by 1 km, and it was surrounded by a moat.
- The water management system of the city was unique. The fortification was carried out in the 4th to 3rd century BCE, when King Kharavela took up the repair of the city 2,100 years ago.
- Sisupalgarh is said to be one of very few historical references of the present capital city of Bhubaneswar.



DC-3 'Dakota' aircraft of Biju Patnaik

Why in News

Odisha Chief Minister Naveen Patnaik unveiled former Chief Minister Biju Patnaik's renovated Douglas DC-3 'Dakota' aircraft for public viewing at the Bhubaneswar airport on his 107th birth anniversary.

Important Points

- The Douglas DC-3 is a propeller-driven airliner manufactured by Douglas Aircraft Company, which had a lasting effect on the airline industry in the 1930s to 1940s and World War II. It was developed as a larger, improved 14-bed sleeper version of the Douglas DC-2.
- It is said that Biju Patnaik had flown this aircraft to rescue former Indonesian vice-president Mohammad Hatta and former Prime Minister Sutan Sjahrir in one of his most famous feats as a pilot.
- Right from his childhood, Patnaik was attracted towards aeroplanes and dreamt of being a pilot one day.
- Biju Patnaik joined the Royal Indian Air Force in 1936, mostly flying supply and transport planes such as the 'Dakota'.
- In the early 1940s, as Imperial Japan started moving eastwards and annexing Western colonies in southeast Asia, Biju flew many sorties rescuing British officials and families from the Japanese advance.
- He was integral in the evacuation of British officials from Rangoon. Patnaik also flew supply missions to assist China's Chiang Kai-Shek and during the Battle of Stalingrad (1942-43), he would undertake a risky supply run to the besieged city – an effort for which he was honoured by the Russians on the 50th anniversary of the war's end.
- But while Patnaik remained a committed RIAF pilot and an excellent one at that (as mentioned in a 1945 Intelligence Bureau communique), he was also a nationalist at heart, committed to India's independence and inspired by Mahatma Gandhi.
- While flying British planes over Indian troops, he would sometimes drop 'seditious' pamphlets, supporting the Quit India Movement.
- Even as the Head of RIAF's Air Transport Command, he would secretly ferry freedom fighters like Ram Manohar Lohia to meetings across the country.
- Patnaik's nationalist exploits brought him to the attention of Jawaharlal Nehru, who would rely on his flying prowess multiple times in the future.

- However, in 1943, Biju Patnaik's surreptitious activities were discovered and he was imprisoned for two years for his role in the Quit India Movement.
- A year after being released from prison in 1945, Patnaik got elected to the Orissa Assembly and began his long career in politics. But aviation did not leave him.
- In 1947, he started the Kalinga Airlines with a fleet of old Dakotas. He would carry out important missions for the Indian government in Kashmir and the Northeast.
- But, arguably his most famous flying feat came not in the service of his own country but of Indonesia.
- Prime Minister Jawaharlal Nehru was a firm believer in solidarity among colonised nations. Thus, when the Dutch began military action to retake control over their former colony, Nehru felt strongly about it.
- He asked Patnaik to fly Prime Minister Sutan Sjahrir and then vice-president Mohammad Hatta out of Java so they could address the world about the ongoing crisis in Indonesia in the Inaugural Asian Relations Conference.
- At the time, the Dutch controlled Indonesia's seas as well as its air routes, effectively trapping nationalist statesmen like Sjahrir in Java.
- On July 21, 1947, Patnaik flew to Jakarta in his old and faithful Dakota. Dodging Dutch air defence systems, he landed at an improvised airstrip near Jakarta.
- He picked up Sjahrir and Hatta, refuelled using fuel left-over by the Japanese during their occupation, and flew back to India via Singapore.
- In 1950, after Indonesia gained independence, once and for all, Biju Patnaik was heavily felicitated by the new government.
- He was offered honorary Indonesian citizenship as well as a property, both of which he refused.
- He was also given the title of Bhoomi Putra ("son of the soil"), an honour seldom given to non-natives.
- In 1996, when Indonesia celebrated its 50th Independence Day, Biju Patnaik was awarded its highest national award, the 'Bintang Jasa Utama'.



The Indonesian National Movement

- The Dutch began colonising what we today know as Indonesia as far back as the 17th century.
- By the 20th century, the Dutch East Indies was the Netherlands' most important colony with abundant resources from cash crops like rubber and tobacco to massive reserves of oil.
- For these reasons, Indonesia was seen as vital for Japanese imperial interests during the War. Japan, which was notoriously resource poor, saw Indonesia as an important colony to sustain its war economy.
- From the beginning of 1942 till 1945, Japan occupied much of Indonesia. But as the tide of war turned against the Japanese, the occupation became more and more unwieldy, with nationalist fervour rising among the people.
- Finally, in 1945, after the Japanese surrender, popular leaders Sukarno and Mohammad Hatta declared independence, forming the Republic of Indonesia.
- However, the Dutch were far from done with their beloved colony, and expected to reassert their control once the Japanese left.
- After two years of negotiations, in 1947, the Dutch decided to settle matters by force.

Attukal Pongala

Why in News

Attukal Pongala, considered one of the largest women's gatherings in the world, around 15 lakh women participated in the festival.

Important Points

- It is a 10-day religious festival celebrated at the Attukal Bhagavathy Temple in Thiruvananthapuram, Kerala.

- On the ninth day there is a huge gathering of millions of women on the temple surroundings.
- These women prepare a divine food made of rice in earthen pots and offer it to the Attukal Amma (Goddess of the Temple).
- The pongala preparation starts with the ritual called 'Aduppuvettu'. This is the lighting of the pongala hearth (called Pandara Aduppu) placed inside the temple by the chief priest. This is the earliest Pongala festival in Kerala.
- The festival is marked as the largest annual gathering of women by the Guinness World Records. In 2009, a new Guinness World Records celebrated 2.5 million attendance.
- Attukal Bhagavathy Temple is also known as "women's Sabarimala" and is famous for its Pongala festival.



Attukal Bhagavathy temple

- The deity worshipped in the temple is Kannagi, an incarnation of Goddess Parvati, Lord Shiva's consort.
- As we know from the Tamil poem Silappathikaram (the Epic of the Anklet by Ilango), Kannagi's husband Kovalan was sentenced to death by the Madurai king for reportedly stealing the queen's anklet.
- After proving the innocence of her husband, Kannagi leaves Madurai and heads to the Kodungalloor temple.
- On the way, she stops at Attukal and her incarnation is said to be Attukalamma, the Goddess in the temple.
- Attukal is where her rage was said to have subsided and Attukalamma became compassionate and helpful towards those who worshipped her.
- Devotees believe that she hears their prayers and vows and alleviates their pain. The celebration of Attukal Pongala is said to bring happiness and prosperity to the family.
- Silappathikaram or Silappatikaram is the earliest Tamil epic. It is a poem of 5,730 lines in almost entirely akaval meter. The epic is a tragic love story of an ordinary couple, Kannaki and her husband Kovalan.
- It was written in the 5th–6th century AD by Prince Ilanko Adikal (Ilango Adigal).
- The Silappathikaram has more ancient roots in the Tamil bardic tradition, as Kannaki and other characters of the story are mentioned or alluded to in the Sangam literature such as in the Narrinai and later texts such as the Kovalam Katai.

Pritzker Prize 2023

Why in News

British architect and urban planner Sir David Chipperfield, is the 2023 Laureate of The Pritzker Architecture Prize.

Important Points

- It is the highest international honour for architects whose built work demonstrates a combination of those qualities of talent, vision and commitment, which has produced consistent and significant contributions to humanity and the built environment through the art of architecture.
- It is considered to be one of the world's premier architecture prizes, and is often referred to as the Nobel Prize of architecture.
- The award was founded in 1979 by Jay A. Pritzker and his wife Cindy.
- The award is funded by the Pritzker family and sponsored by the Hyatt Foundation
- The Pritzker Architecture Prize is said to be awarded "irrespective of nationality, race, creed, or ideology".
- The recipients receive US\$100,000, a citation certificate, and, since 1987, a bronze medallion.



Sir David Contributions:

- With over 100 works from museums and civic buildings to offices and residences, his studio, David Chipperfield Architects (DCA), has been re-imagining buildings and working on renovations and restorations with climate and site context at the forefront.

- Mindful of the way architecture contributes to climate change and social inequality, Chipperfield has been a tireless advocate of transforming spaces and reinvigorating cities.
- Chipperfield, who grew up on a farm in Devon, south-west England, went to boarding school in Somerset, where he was nudged by his art teacher to join the Kingston School of Art.
- His skills took him to the Architectural Association School of Architecture in London, where his classmate was another well-known architect, Zaha Hadid.
- Chipperfield worked with British-Italian architect Richard Rogers before setting up his own studio in 1985.
- The master architect — winner of many competitions and curator of the 2012 Architecture Venice Biennale and a year-long guest editor of the Italian design magazine Domus in 2020 — has also been an advocate for political causes, protesting Brexit, and pointing to the 2017 Grenfell Tower fire in which more than 70 people were killed, to demonstrate the damage an absence of regulations can do.
- His most famous reconstruction is The Neues Museum (Berlin, 2009), the mid-19th century structure which was in disrepair after World War II.
- The outdoor spaces were made so generous that it acts today as a social connector in the German capital.
- Much of Chipperfield's design sensibilities owe to his early years spent in Japan, where he worked on fashion designer Issey Miyake's retail outlets.
- In 2022, the DCA completed restoration of the Procuratie Vecchie in Venice's iconic St Mark's Square.
- Chipperfield's other significant works include the BBC's Scotland headquarters (Glasgow, 2007); Campus Saint Louis Art Museum (Missouri, 2013); Museo Jumex (Mexico City, 2013); One Pancras Square (London, 2013), Royal Academy of Arts masterplan (London, 2018) and Kunsthaus Zürich (Zurich, 2020).
- He has been working with the government in Galicia, Spain, since 2017 to strengthen the region's economic and cultural bases by reviving processes and building connections among land, food and environment.
- The prize, which will be conferred on him at a ceremony in Athens in May, is in recognition of his four-decade practice in Europe, North America, and Asia.

Vaikom Satyagraha

Why in News

The State-level inauguration of the Vaikom Satyagraha centenary celebrations will be jointly done by Chief Minister Pinarayi Vijayan and his Tamil Nadu counterpart M.K. Stalin at Vaikom on April 1.

Important Points

- T. K. Madhavan, an Ezhava leader, first advanced the question of temple entry of lower castes in an editorial in Deshabhimani newspaper in December, 1917.
- Temple entry of lower castes was discussed and resolutions were introduced at meetings of S N D P Yogam and the Travancore Assembly between 1917 and 1920.
- In 1919, an assembly of nearly 5,000 Ezhavas demanded the right to entry into all Hindu temples managed by the Government of Travancore.
- In November, 1920, T. K. Madhavan, walked beyond the regulatory notice boards on a road near the Vaikom Temple. He later publicly announced his defiance to the district magistrate. Madhavan's later temple-entry meetings in Travancore instigated counter-agitations from caste Hindus.
- T. K. Madhavan met with "Mahatma" Gandhi at Tirunelveli in September 1921 to inform him of the predicament of Ezhavas in Kerala.
- Gandhi, though initially oblivious to the position of the community in state, offered his support for the movement ("you must enter temples and court imprisonment if law interferes").
- At the 1923 Indian National Congress session at Kakinada, a resolution was passed which committed the party to work for 'the eradication of untouchability'. This resolution was introduced by T. K. Madhavan. The resolution also stated that 'temple entry was the birthright of all Hindus'.
- In January 1924, Congress leader K. Kelappan convened an 'Anti-untouchability Committee' within the K P C C. Kelappan later toured southern Kerala with a contingent of Congress leaders from Malabar District.
- Madhavan also succeeded in getting the finances, the Congress support and pan-India attention for the satyagraha. The S N D P Yogam also conveyed its approval of the agitation.

Vaikom Satyagraha

- Vaikom Satyagraha, from 30 March 1924 to 23 November 1925, was a nonviolent agitation for access to the prohibited public environs of the Vaikom Temple in the Kingdom of Travancore.
- The Kingdom of Travancore was known for its rigid and oppressive caste system and hence Swami Vivekananda called Travancore a “lunatic asylum”.
- The campaign, led by Congress leaders T. K. Madhavan, K. Kelappan and K. P. Kesava Menon, was noted for the active support and participation offered by different communities and a variety of activists.
- Most of the great temples in the princely state of Travancore had for years forbidden lower castes (untouchables) not just from entering, but also from walking on the surrounding roads.
- The agitation was conceived by the Ezhava Congress leader and a follower of Sri Narayana Guru, T. K. Madhavan.
- It demanded the right of the Ezhavas and ‘untouchables’ to use roads around the Vaikom Temple.
- Mahatma Gandhi himself visited Vaikom in March, 1925. Travancore government eventually constructed new roads near the temple for the use of lower castes.
- The roads, however, kept the lower castes adequately away from the near environs of the Vaikom Temple and the temple remained closed to the lower castes.
- After the intervention of Mahatma Gandhi, the agitation was given up and a compromise reached with Regent Sethu Lakshmi Bayi who released all those arrested and opened the north, south and west public roads leading to Vaikom Mahadeva Temple to all castes.
- She refused to open the eastern road. The compromise was criticized by E. V. Ramasamy “Periyar” and some others.
- Only in 1936, after the Temple Entry Proclamation, was access to the eastern road and entry into the temple allowed to the lower castes.
- Vaikom Satyagraha markedly brought the method of nonviolent public protest to Kerala.

Cheti Chand 2023

Why in News

Cheti Chand, the birthday of saint Jhulelal, falls on March 22.

Important Points

- The festival of Cheti Chand, also known as Jhulelal Jayanti.
- The auspicious occasion is celebrated by Sindhi Hindus on the first day of the Sindhi month of Chet.
- It falls on the second day of Chaitra Shukla Paksha and is believed to be the birthday of Jhulelal, the patron saint of Sindhis. It also marks the arrival of spring and the harvesting season.
- It also marks the beginning of the Sindhi New Year.
- The date of the festival is based on the lunar cycle of the lunisolar Hindu calendar, falling on the first day of the year in the Sindhi month of Chet.

Cheti Chand 2023 History and Significance

- Cheti Chand is celebrated as the birthday of Ishtadeva Uderolal, also known as Jhulelal.
- According to legends, Sindhis believe that Uderolal was born in 1007 after they prayed to the Hindu God Varun Devon. They prayed to the Lord on the banks of the River Indus to save them from being persecuted by Muslim king Mirkshah.
- It is believed that the River God told the people that a divine child would be born in Nasarpur, who came to be known as Saint Jhulelal, and he will save them from the tyrant.
- The Sindhis celebrate Cheti Chand by praying to the God of water to protect them from forced conversions.
- The festival is marked by observing a fast, making offerings, and praying to the God of water.
- People worship near water bodies, such as rivers, lakes, and ponds by lighting Jyot Jagan (a diya made of



wheat flour with five wicks) and taking Behrana Sahib, an offering consisting of an oil diya, cardamom, sugar, fruits, and Akho.

- The Behrana Sahib is immersed in the water, and Pallav is sung to receive blessings from the Lord.

Sharada Peeth corridor

Why in News

Recently, The Union Home Minister has said that the government will move forward to open Sharda Peeth on the lines of the Kartarpur corridor.

Important Points

Sharda Peeth

- Sharda Peeth, a revered site for the Hindu community, is located in Neelum Valley in Pakistan Occupied Kashmir (PoK) across Teetwal village(in the Neelum Valley) in Kupwara district of Jammu and Kashmir, along the Line of Control (LoC).
- It is situated 1,981 metres (6,499 ft) above sea level, along the Neelum River in the village of Sharda, in the valley of Mount Harmukh, believed by Kashmiri Pandits to be the abode of Shiva.
- It was among the most prominent temple universities in the Indian subcontinent.
- Known in particular for its library, stories recount scholars travelling long distances to access its texts.
- It played a key role in the development and popularisation of the Sharada script in North India, causing the script to be named after it, and Kashmir to acquire the moniker “Sharada Desh”, meaning “country of Sharada”.
- As one of the Maha Shakti Peethas, Hindus believe that it represents the spiritual location of the goddess Sati’s fallen right hand.
- Sharada Peeth is one of the three holiest sites of pilgrimage for Kashmiri Pandits, alongside the Martand Sun Temple and the Amarnath Temple.
- The beginnings of Sharada Peeth are uncertain, and the question of origins difficult, because Sharada Peeth might have been both a temple and an educational institution.
- It was probably commissioned by Lalitaditya Muktapida (r. 724 CE–760 CE) though no definitive evidence exists in favor.
- Al-Biruni recorded the place for the first time, as a revered shrine housing a wooden image of Sharda — however, he had never ventured into Kashmir and based his observations on hearsay.



Chapter- 2

POLITY & GOVERNANCE

Provisions for summoning the legislative assembly

Why in News

Punjab government has moved to Supreme Court over Governor's refusal to give his approval for the Punjab Cabinet's decision to summon a Budget session of Vidhan Sabha.

Important Points

Constitutional provisions for summoning the assembly by governor:

- The Governor has to act according to the aid and advice of the council of ministers.
- Constitutionally, the office of the Governor has little discretion to not act on the cabinet's advice.
- Under Article 174, a Governor shall summon the House at a time and place, as she or he thinks fit.
- Article 174 (2) (a) says a Governor may from "time to time" prorogue the House and 174 (2) (b) allows her or him to dissolve the Legislative Assembly.
- Article 163(1) of the Constitution says that "there shall be a council of Ministers with the Chief Minister at the head to aid and advise the Governor in the exercise of his functions, except in so far as he is by or under this constitution required to exercise his functions or any of them in his discretion."
- A joint reading of the two provisions leaves the Governor with minimal discretion in summoning the house.
- In 2016, a Constitution Bench of the Supreme Court in Nabam Rebia and Bamang Felix vs Deputy Speaker, or the Arunachal Pradesh Assembly case, expressly said that the power to summon the House is not solely vested in the Governor.

Grounds on which the Punjab Governor has refused:

- Governor Purohit has cited Article 167 of the Constitution, which relates to the duties of the Chief Minister in furnishing information to the Governor. Governor Purohit's questions to CM Mann on appointments are under this provision.
- The provision states that it shall be the duty of the Chief Minister of each state to communicate to the Governor of the state all decisions of the Council of Ministers relating to the administration of the affairs of the state and proposals for legislation; to furnish such information relating to the administration of the affairs of the state and proposals for legislation as the Governor may call for; and, if the Governor so requires, to submit for the consideration of the Council of Ministers any matter on which a decision has been taken by a Minister but which has not been considered by the Council.
- However, there are a few instances when the Governor can act independently on summoning the House.
- For example, when the chief minister has lost the support of the House and his strength is debatable, then the Governor need not wait for the advice of the council of ministers to hold a floor test.

Can the government summon the House without Governor's approval?

- Procedure as per Article 174 of the Constitution requires the Governor to summon the House.
- The council of ministers approves the government's decision of convening the House. The government then writes to the Governor about the Cabinet's decision and it is then approved.
- Additionally, Article 175 provides for the right of the Governor to address and send messages to the House.
- The Governor may address the Legislative Assembly and may for that purpose require the attendance of members.
- The Governor may send messages to the House, whether with respect to a Bill then pending in the Legislature or otherwise, and a House to which any message is so sent shall with all convenient dispatch consider any matter required by the message to be taken into consideration.



- As per Article 176, the Governor has to address the house at the commencement of the first session after each general election to the Legislative Assembly and at the commencement of the first session of each year.
- The government has to make a provision regulating the procedure of the House for the allotment of time for discussion of the matters referred to in such address.

Centre suspends FCRA license of the Centre for Policy Research (CPR)

Why in News

The Union Home Ministry has recently suspended the Foreign Contribution Regulation Act (FCRA) licence of the Centre for Policy Research (CPR).

Important Points

FCRA

- The FCRA was enacted during the Emergency in 1976 amid apprehensions that foreign powers were interfering in India's affairs by pumping money into the country through independent organisations. These concerns were, in fact, even older — they had been expressed in Parliament as early as in 1969.
- The law sought to regulate foreign donations to individuals and associations so that they functioned “in a manner consistent with the values of a sovereign democratic republic”.
- An amended FCRA was enacted under the UPA government in 2010 to “consolidate the law” on utilisation of foreign funds, and “to prohibit” their use for “any activities detrimental to national interest”.
- The law was amended again by the current government in 2020, giving the government tighter control and scrutiny over the receipt and utilisation of foreign funds by NGOs.
- Broadly, the FCRA requires every person or NGO seeking to receive foreign donations:
 - To be registered under the Act.
 - To open a bank account for the receipt of the foreign funds in State Bank of India, Delhi.
 - To utilise those funds only for the purpose for which they have been received and as stipulated in the Act.
 - They are also required to file annual returns, and they must not transfer the funds to another NGO.
- The Act prohibits the receipt of foreign funds by candidates for elections, journalists or newspaper and media broadcast companies, judges and government servants, members of legislature and political parties or their office-bearers, and organisations of a political nature.
- In July 2022, the MHA effected changes to FCRA rules through two gazette notifications and increased the number of compoundable offences under the Act from 7 to 12.
- The other key changes were exemption from intimation to the government for contributions less than Rs 10 lakh – the earlier limit was Rs 1 lakh — received from relatives abroad, and increase in time limit for intimation of opening of bank accounts.
- Under the new rules, political parties, legislature members, election candidates, judges, government servants, journalists and media houses among others – all barred from receiving foreign contribution – will no longer be prosecuted if they receive foreign contribution from relatives abroad and fail to intimate the government within 90 days.
- However, the recipient will be required to pay 5% of the foreign contribution received.

How is FCRA registration granted?

- NGOs that want to receive foreign funds must apply online in a prescribed format with the required documentation.
- FCRA registrations are granted to individuals or associations that have definite cultural, economic, educational, religious, and social programmes.
- Following the application by the NGO, the MHA makes inquiries through the Intelligence Bureau into the antecedents of the applicant, and accordingly processes the application.
- Under the FCRA, the applicant should not be fictitious or benami; and should not have been prosecuted or convicted for indulging in activities aimed at conversion through inducement or force, either directly or indirectly, from one religious faith to another.
- The applicant should also not have been prosecuted for or convicted of creating communal tension or disharmony; should not have been found guilty of diversion or misutilisation of funds; and should not be engaged or likely to be engaged in the propagation of sedition.

- The MHA is required to approve or reject the application within 90 days.
- In case of failure to process the application in the given time, the MHA is expected to inform the NGO of the reasons for the same.
- Once granted, FCRA registration is valid for five years. NGOs are expected to apply for renewal within six months of the date of expiry of registration.
- In case of failure to apply for renewal, the registration is deemed to have expired, and the NGO is no longer entitled to receive foreign funds or utilise its existing funds without permission from the ministry.

On what basis is approval cancelled?

- The government reserves the right to cancel the FCRA registration of any NGO if it finds it to be in violation of the Act.
- Registration can be cancelled if an inquiry finds a false statement in the application;
- If the NGO is found to have violated any of the terms and conditions of the certificate or renewal;
- If it has not been engaged in any reasonable activity in its chosen field for the benefit of society for two consecutive years; Or if it has become defunct.
- It can also be cancelled if “in the opinion of the Central Government, it is necessary in the public interest to cancel the certificate”, the FCRA says.
- Registrations are also cancelled when an audit finds irregularities in the finances of an NGO in terms of misutilisation of foreign funds.
- According to FCRA, no order of cancellation of certificate can be made unless the person or NGO concerned has been given a reasonable opportunity of being heard.
- Once the registration of an NGO is cancelled, it is not eligible for re-registration for three years.
- The ministry also has powers to suspend an NGO’s registration for 180 days pending inquiry, and can freeze its funds.
- All orders of the government can be challenged in the High Court.

The Centre for Policy Research (CPR)

- The Centre for Policy Research is an Indian think tank focusing on public policy.
- CPR is a non-profit, non-partisan, independent institution dedicated to conducting research that contributes to high quality scholarship, better policies, and a more robust public discourse about the issues that impact life in India.
- Established in 1973 and located in New Delhi, it is one of the national social science research institutes recognized by the Indian Council of Social Science Research(ICSSR).
- It is recognised as a not-for-profit society by the Government of India, and its contributions to the Centre are tax exempt.
- CPR works with government departments, autonomous institutions, charitable organisations and universities in India and across the globe.
- Through its five-decade long history, CPR has worked in partnership with governments and grassroots organisations. These include partnerships with the Ministry of Environment, Forest and Climate Change; Ministry of Rural Development; Ministry of Jal Shakti; the Governments of Andhra Pradesh, Odisha, Punjab, Tamil Nadu, Meghalaya, and Rajasthan, amongst others.
- Through their research and writing, CPR scholars have made pioneering contributions to public policy in India.
- Former Prime Minister Manmohan Singh and late Chief Justice of India Y.V. Chandrachud are the former members of the CPR governing board.
- CPR receives grants from the ICSSR, and is a Department of Science and Technology (DST) recognised institution.



- CPR receives grants from a variety of domestic and international sources, including foundations, corporate philanthropy, governments, and multilateral agencies.

Supreme Court of India verdict on ECI appointments

Why in News

A five-judge bench of the Supreme Court recently unanimously ruled that a high-power committee must pick the Chief Election Commissioner (CEC) and Election Commissioners (ECs).

Important Points

- According to article 324(2) of the Indian constitution, the Election Commission shall consist of the Chief Election Commissioner and such number of other Election Commissioners, if any, as the President may from time-to-time fix and the appointment of the Chief Election Commissioner and other Election Commissioners shall, subject to the provisions of any law made in that behalf by Parliament, be made by the President.
- The crux of the challenge is that since there is no law made by Parliament on this issue, the Court must step in to fill the “constitutional vacuum.” This examination also leads to the larger question of separation of powers and if the judiciary is overstepping its role in filling this gap in the law.
- Two corollary issues that were also examined by the Court are whether the process of removal of the two Election Commissioners must be the same as the CEC; and regarding the funding of the EC.
- As per the current process, the Law Minister suggests a pool of suitable candidates to the Prime Minister for consideration. The President makes the appointment on the advice of the PM.

What is the court's verdict?

- The apex court verdict stated that the appointment of the Chief Election Commissioner and the Election Commissioners shall be made by the President on the advice of a Committee consisting of the Prime Minister, the Leader of the Opposition of the Lok Sabha, and in case no leader of Opposition is available, the leader of the largest opposition Party in the Lok Sabha in terms of numerical strength, and the Chief Justice of India.
- The bench made it clear that this will be subject to any law to be made by Parliament.
- This means that Parliament can undo the effect of the SC verdict by bringing in a new law on the issue.
- On the issue of whether the process of removal of Election Commissioners must be the same as it is for the CEC, the Court ruled that it cannot be the same.
- The Constitution states that the CEC can be removed in a process similar to a judge — through a majority in both houses of Parliament on grounds of proven incapacity or misbehaviour.
- The Court said that it may be true that there is equality otherwise, which exists between the Chief Election Commissioner and the Election Commissioners in various matters dealt with under the Act. However, we must bear in mind, in law, Article 324 is inoperable without the Chief Election Commissioner.
- On the issue of funding the EC, the Court left it to the government. The bench said that they would only make an appeal on the basis that there is an urgent need to provide for a permanent Secretariat and also to provide that the expenditure be charged on the Consolidated Fund of India and it is for the Union of India to seriously consider bringing in the much-needed changes.

Debates of the Constituent Assembly as the basis for the verdict

- The Court's verdict is based on a reading of the debates of the Constituent Assembly to ascertain what the founding members of the Constitution envisaged the process to be and an interpretation of similar provisions in the Constitution.
- The verdict states that a “golden thread runs through” the proceedings of the Constituent Assembly debates on the provision.
- The verdict states that all the Members were of the clear view that elections must be conducted by an independent Commission. It was a radical departure from the regime prevailing under the Government of India Act, 1935.
- According to the court the deliberate addition of the words “subject to the provisions of any law made in that behalf by Parliament” after prolonged discussions, indicate that what the Founding Fathers clearly

contemplated and intended was, that Parliament would step in and provide norms, which would govern the appointment to such a uniquely important post as the post of CEC and the ECs.

- The ruling examined a number of provisions in the Constitution, including the ones relating to the powers of the Supreme Court and High Court; establishing the SC, ST and Backward Classes Commissions, etc. where the Constitution uses the phrase “subject to the provisions of any law made by Parliament”.
- The Court finds that while a legislation has been supplemented for those provisions, there is no law on appointment of the CEC even 70 years after independence.
- It is equally clear that Article 324 has a unique background. The Founding Fathers clearly contemplated a law by Parliament and did not intend the executive exclusively calling the shots in the matter of appointments to the Election Commission.

Government’s stand

- The government argued that “in the absence of such a law, the President has the constitutional power.” The government has essentially asked the court to exhibit judicial restraint.
- The court in its ruling discusses at length its intention to “maintain a delicate balance” on separation of powers.
- The ruling stated that while, it is true that, ordinarily, the court cannot, without anything more, usurp what is purely a legislative power or function, in the context of the Constitution, which clothes the citizens with Fundamental Rights and provides for constitutional goals to be achieved and inertia of the Legislative Department producing a clear situation, where there exist veritable gaps or a vacuum, the Court may not shy away from what essentially would be part of its judicial function.
- The ruling cites past instances of the Court stepping into to fill a gap in the law, including the Vishaka guidelines to curb sexual harassment at workplace, and the interpretation on the process of appointment of judges.



Old Pension Scheme vs New Pension Scheme

Why in News

Government has allowed one-time option for those who applied for jobs advertised before December 22, 2003, the day NPS was notified but joined the service in 2004, when the NPS came into effect.

Important Points

- The proposed option is available to the Central government employees enrolled under the NPS as they joined the service on or after January 1, 2004, the day the NPS came into effect, even though such posts were advertised before December 22, 2003, the day it was notified.
- The employees have time till August 31 2023 to opt for the OPS. The order will be applicable to Central Armed Police Force (CAPF) personnel and other Central government employees who joined the services in 2004 as the recruitment process was delayed due to administrative reasons.
- The employees’ contribution to the NPS will be credited to the General Provident Fund (GPF) of the individual.
- Several states such as Chhattisgarh, Rajasthan, Jharkhand and Himachal Pradesh have announced that they would restore the OPS.
- Till January 31, there were 23,65,693 Central government employees and 60,32,768 State government employees enrolled under the NPS.
- Except West Bengal, all States had implemented the NPS.

OPS vs NPS

- Under the OPS, retired employees received 50% of their last drawn salary as monthly pensions.
- However, NPS is a contributory pension scheme under which employees contribute 10% of their salary (basic + dearness allowance). The government contributes 14% towards the employees’ NPS accounts.
- In the OPS, it’s predetermined how much pension an employee will get linked to her last drawn salary and length of service.

- NPS, on the other hand, is a market-linked savings product that has a defined contribution.
- NPS allows an individual to invest in three types of funds :
 1. Safe, or conservative (allowing up to 10% investment in equity).
 2. Balanced, or moderate (up to 30% in equity).
 3. Growth, aggressive (up to 50% in equity).
- The balance would be invested in corporate bonds or government securities. The volatility of NPS is usually compensated by the debt segment of the National Pension System.
- Annuity in the NPS allows employees to receive continuous income in later years after retirement.
- For example, in the case of OPS, if a government employee's basic monthly salary at the time of retirement was Rs 10,000, she would be assured of a pension of Rs 5,000.
- Additionally, the monthly pension increases with hikes in dearness allowance announced by the government for serving employees.
- However, in the case of the NPS, the pension benefit is determined by factors such as the amount of contribution made, the age of joining, the type of investment, and the income drawn from that investment.
- Private employees can also choose to contribute to NPS.
- For example, if your current age is entered as 35 and the retirement age is 60, then the total investing period will be 25 years. Your monthly contribution towards NPS can be as low as Rs 1,000. The interest earned is on a monthly compounding basis.

Dearness allowance

- Dearness allowance is calculated as a percentage of an Indian citizen's basic salary to mitigate the impact of inflation on people.
- Dearness allowances are revised twice a year, effective January 1 and July 1.
- A 4% dearness allowance hike would mean that a retiree with a pension of Rs 5,000 a month would see her monthly income rise to Rs 5,200 a month

One Step Forward, Two Steps Back

Old Scheme	New Scheme
Under this, govt gives 50% of the salary as pension on retirement	Available to both pvt and govt employees
Since this puts a financial burden on the exchequer, the Centre had introduced a new pension system	Contribute 10% of salary, employer matches it
	Money invested in securities
	Can't withdraw full amount at retirement
	Have access to 60% of funds accrued; 40% has to be reinvested

Supreme Court eases norm for appointment of consumer court presidents, members

Why in News

Recently, Supreme Court of India has used its extraordinary powers under Article 142 to ease norm for selection of consumer court presidents, members.

Important Points

What are the eased norms?

- To attract younger talent to preside over consumer courts, the court has reduced the mandatory professional experience from 20 to 10 years.
- The apex court said the Central government and the state governments concerned have to come with an amendment in the Consumer Protection (Qualification for appointment, method of recruitment, procedure of appointment, term of office, resignation and removal of President and Members of State Commission and District Commission) Rules, 2020 to provide for 10 years' experience to become eligible for appointment as President and member of the state commission and district forums instead of 20 years and 15 years respectively.
- However, it did not want to wait for the law. Rather, the court said its judgment would fill the vacuum until the amendments were made in the 2020 Rules.
- It has directed that in future and hereinafter, a person having bachelor's degree from a recognised university and who is a person of ability, integrity and standing, and having special knowledge and professional experience of not less than 10 years in consumer affairs, law, public affairs, administration, economics, commerce,

industry, finance, management, engineering, technology, public health or medicine, shall be treated as qualified for appointment of president and members of the State Commission.

- The the judgment noted that appointments to the district consumer commissions would also be made on the same criteria.
- It also introduced written exams and viva voce to check the candidates' performance.
- The written test would have two papers on subjects like current affairs, the Constitution, consumer laws, drafting, etc.
- Under Rule 6(9), the Selection Committee is empowered with the uncontrolled discretionary power to determine its procedure to recommend candidates to be appointed as President and Members of the State and District Commission. The transparency and selection criteria are absent under Rule 6(9).

Linking PAN with Aadhaar is mandatory

Why in News

The Central Board of Direct Taxes (CBDT) has asked all taxpayers to link their permanent account number (PAN) with their Aadhaar by March 31, 2023.

Important Points

Why it has been made mandatory?

- The Income-tax Department announced the linking of PAN with Aadhaar after it came across instances where multiple permanent account numbers (PANs) were allotted to one person, or where one PAN was allotted to more than one person.
- To have a robust way of de-duplication of the PAN database, it was made mandatory for a taxpayer who is eligible to obtain Aadhaar, to quote his Aadhaar in the application form for PAN and return of income.

Who needs to link PAN with Aadhaar?

- As per a circular issued by CBDT in March 2022, the Income-tax Act makes it mandatory for every person who has been allotted a PAN as on July 1, 2017, to intimate his/her Aadhaar number so that Aadhaar and PAN can be linked. This is required to be done on or before March 31, 2023, failing which the PAN shall become inoperative.

Who is not required to link PAN with Aadhaar?

There are a few categories of individuals for whom this linkage is not compulsory.

- Any person of age 80 years and above.
- A non-resident as per the Income-tax Act.
- A person who is not a citizen of India.

Implications of not linking PAN with Aadhaar

- CBDT has said that in case a person fails to link his or her PAN with Aadhaar, the PAN will become inoperative. In such a case, the person will not be able to furnish, intimate, or quote his/ her PAN, and shall be liable to all the consequences under the Income-tax Act for such failure.

Some of the major implications of non-compliance are:

- The person shall not be able to file the income tax return using the inoperative PAN.
- Pending returns will not be processed.
- Pending refunds cannot be issued to inoperative PANs.
- Pending proceedings as in the case of defective returns cannot be completed once the PAN is inoperative.
- Tax will be required to be deducted at a higher rate if PAN becomes inoperative.
- Besides these consequences, the person may find difficulties in doing other financial transactions such as with banks, as PAN is an important KYC criterion for these transactions.

Why has SEBI made it mandatory for investors to link PAN with Aadhaar?

- Apart from CBDT, capital markets regulator Securities and Exchange Board of India (SEBI) too on directed investors to link their PAN with their Aadhaar by the end of March 2023 to continue doing transactions in the securities market.
- Since PAN is the key identification number and part of KYC requirements for all transactions in the

securities market, all SEBI-registered entities and Market Infrastructure Institutions (MIIs) are required to ensure valid KYC for all participants.

- All existing investors are required to ensure the linking of their PAN with their Aadhaar before March 31, 2023, for continual and smooth transactions in the securities market and to avoid consequences of non-compliance with the March 30, 2022, CBDT circular, as such accounts would be considered non-KYC compliant, and there could be restrictions on securities and other transactions until the PAN and Aadhaar are linked

Central Board of Direct Taxes(CBDT)

- It is a statutory authority functioning under the Central Board of Revenue Act, 1963.
- The officials of the Board in their ex-officio capacity also function as a Division of the Ministry dealing with matters relating to levy and collection of direct taxes.
- The Central Board of Revenue as the apex body of the Department, charged with the administration of taxes, came into existence as a result of the Central Board of Revenue Act, 1924.
- Initially the Board was in charge of both direct and indirect taxes. However, when the administration of taxes became too unwieldy for one Board to handle, the Board was split up into two, namely the Central Board of Direct Taxes and Central Board of Excise and Customs with effect from 1.1.1964.
- This bifurcation was brought about by constitution of two Boards u/s 3 of the Central Board of Revenue Act, 1963.
- The CBDT consists of a Chairman and six Members.



Women's Reservation Bill

Why in News

Bharat Rashtra Samithi (BRS) leader K Kavitha has recently began a day-long hunger strike in New Delhi, demanding passage of the Women's Reservation Bill (WRB).

Important Points

Women's Reservation Bill

- The WRB was first introduced in 1996 by the HD Deve Gowda government. After the Bill failed to get approval in Lok Sabha, it was referred to a Joint Parliamentary Committee chaired by Geeta Mukherjee, which presented its report in December 1996.
- However, the Bill lapsed with the dissolution of the Lok Sabha and had to be reintroduced.
- Atal Bihari Vajpayee's NDA government reintroduced the Bill in the 12th Lok Sabha in 1998. Yet again, it failed to get support and lapsed.
- In 1999, the NDA government reintroduced it in the 13th Lok Sabha. Subsequently, the Bill was introduced twice in Parliament in 2003.
- In 2004, the UPA government included it in its Common Minimum Programme and finally tabled it, this time in Rajya Sabha to prevent it from lapsing again, in 2008.
- Five of the seven recommendations made by the 1996 Geeta Mukherjee Committee were included in this version of the Bill. These were:
 - Reservation for a period of 15 years.
 - Including sub-reservation for Anglo Indians.
 - Including reservation in cases where the state has less than three seats in Lok Sabha (or less than three seats for SCs/STs).

- o Including reservation for the Delhi assembly.
- o changing not less than one-third to as nearly as may be, one-third.
- Notably, two of the excluded recommendations (regarding reservation for OBC women as well as reservation for women in the Rajya Sabha and legislative council) became major sticking points.
- On March 9, 2010, the Bill was passed in the Rajya Sabha with 186-1 votes after immense debate, creating history.
- The Bill, then, reached the Lok Sabha where it never saw the light of day. When the House was dissolved in 2014, it lapsed once again.
- It is seen as a logical extension of the 72nd and 73rd constitutional amendments (1992,1993), which reserved one third of all seats and chairperson posts for women in rural and urban local governments.
- However, historically, there has never been political consensus on the issue. The previous two NDA governments have not even introduced the Bill in Parliament.
- The Bill seeks reserve one-third of the total number of seats in state Assemblies and Parliament for women.

Opposition to WRB

- But there has also been more substantive opposition to the WRB. This has come from parties such as SP, RJD and JD(U).
- A crucial sticking point for them has been the issue of providing quotas to OBC women within the ambit of the Bill.
- While the 1996 committee recommendations included instituting reservation for OBC women within the one-third reservation for women that the Bill proposed, this demand has never been incorporated.
- This has led to opponents saying that the WRB will not benefit their women.

Women in Parliament

- Currently, just 14 per cent of Lok Sabha MPs are women (78 in total). Women make roughly 11 per cent of the Rajya Sabha.
- While the number has increased significantly since the first Lok Sabha, where women made about 5 per cent of the total MPs, it is still far lower than many countries.
- According to data from PRS, Rwanda (61 per cent), South Africa (43 per cent) and even Bangladesh (21 per cent), are ahead of India in this matter.
- According to the Inter-Parliamentary Union's latest report, India ranks 144 out of 193 countries in the representation of women in Parliament.
- As a study by the American Economic Association showed, countries with higher share of women in national parliament are more likely to pass and implement gender sensitive laws.
- A 2010 study by the Harvard Kennedy School showed that female representation in village councils increased female participation and responsiveness to concerns such as drinking water, infrastructure, sanitation and roads.
- Moreover, political participation itself is a human right – regardless of the instrumental value of women's representation in legislatures.

First Edition of Women Icons Leading Swacchata (WINS) Awards 2023

Why in News

To highlight the impact of women in sanitation and waste management, the Union Minister for Housing and Urban Affairs has announced the WINS Awards 2023 on the eve of International Women's Day.

Important Points

About WINS awards

- The WINS Awards 2023 aim to recognize celebrate and disseminate inspiring and exemplary initiatives in urban sanitation and waste management by women led organizations and individual women.
- Applications for the Awards are open to Self-Help Groups (SHGs), Micro-enterprises, Non-Government Organisations (NGOs), Startups and Individual Women Leaders/Swachhata champions.
- Thematic areas for considering the applications include:
 - o Management of Community/Public Toilets.
 - o Septic Tanks Cleaning Services.

- o Treatment Facilities (Used Water/Septage).
- o Municipal Water collection and /or Transportation.
- o Operation of Material Recovery Facilities.
- o Waste to Wealth products.
- o Treatment Facilities (Solid Waste Management).
- o IEC, Training, Capacity Building.
- o Technology and Intervention and Others.
- Urban Local Bodies (ULBs) will evaluate entries & nominate up to 5 applicants to the State via the Swachhatam portal. ULBs can organize public felicitation of their nominees as city winners.
- ULB wise nominations will be evaluated at the State level. Up to 3 entries in each category will be nominated by the State to Ministry of Housing and Urban Affairs (MoHUA).
- State can organize public felicitation of nominees as State winners. State nominations will be evaluated at the national level on their innovativeness, impact, uniqueness, sustainability & replicability.
- At the national level, the MoHUA team will set up a Jury to evaluate the applications and select winners in each category.
- The Jury shall comprise of stakeholders from cities and States, independent experts, brand ambassadors, influencers and industry representatives. Winning entries will be featured in a compendium.

International Women's Day:

- The goal behind Women's Day is to spread the message of gender equality, celebrate the achievements and contributions of women in different spheres, and work towards building a society free of all gender biases, stereotypes, gender parity and discrimination.
- The theme for International Women's Day 2023 is DigitALL: Innovation and technology for gender equality.
- The day also marks a call to action for accelerating gender parity.
- The IWD celebration started with women's rights movements in the US, Russia and other European countries where they demanded civil, social, political and religious rights for women.
- First National Woman's Day (NWD) was observed across the United States on February 28, 1909.
- In 1910, a second International Conference of Working Women was held in Copenhagen, where woman named Clara Zetkin (Leader of the 'Women's Office' for the Social Democratic Party in Germany) tabled the idea of an International Women's Day.
- IWD was marked for the first time in March 1911 – and the date was fixed as 8 March in 1913.
- The United Nations celebrated it for the first time in 1975.



Pre-arrest bail

Why in News

Karnataka Lokayukta has challenged the Karnataka High Court order granting pre-arrest bail to Karnataka BJP MLA Madal Virupakshappa in corruption case.

Important Points

What is pre-arrest bail?

- Black's Law Dictionary describes 'bail' as procuring "the release of a person from legal custody, by undertaking that he shall appear at the time and place designated and submit himself to the jurisdiction and judgment of the court."
- Although "bail" has not been expressly defined in Indian statutes, the Code of Criminal Procedure (CrPC) differentiates between "bailable" and "non-bailable" offenses.
- It also defines three kinds of bail that can be granted — regular bail under Sections 437 and 439; interim bail or short-term bail which is given when regular or anticipatory bail application is pending before the court; and anticipatory or pre-arrest bail.
- The provision for "anticipatory bail" was introduced under Section 438 of the CrPC after the 41st Law

Commission Report in 1969 recommended the need for a measure that protects against arbitrary violation of one's personal liberty, such as when politicians detain their opponents in false cases.

When can anticipatory bail be granted?

- Anticipatory bail can be granted under Section 438, when “any person has reason to believe that he may be arrested on an accusation of having committed a non-bailable offence”.
- It can be granted by the High Court or the Court of Session, under this section, for non-bailable offenses for which one anticipates arrest, even if the actual arrest has not happened or the FIR has not been registered.
- Non-bailable offenses are more serious offenses, punishable with at least three years imprisonment and above.
- Section 438 was amended in 2005, following which it laid down principles for consideration for the grant of anticipatory bail under subsection such as whether the accused is likely to flee, is a habitual offender, or is likely to tamper with evidence along with his antecedents, such as previously being arrested for a cognizable offense.
- However, since state legislatures are empowered to amend certain provisions of the CrPC, Maharashtra, Odisha and West Bengal follow their own, modified versions of Section 438.
- Uttar Pradesh and Uttarakhand did away with anticipatory bail through the CrPC (UP Amendment) Bill, 1976, during Emergency.
- In 2019, however, this was reintroduced after then President Ram Nath Kovind approved the CrPC (Uttar Pradesh Amendment) Bill, 2018.
- Similarly, in 2019, the Uttarakhand Assembly passed an amendment Bill seeking to revive Section 438 of the CrPC.

What are the conditions for granting anticipatory bail?

- While granting anticipatory bail, the Sessions Court or High Court can impose the conditions laid down in sub-section (2) like:
- The person shall make himself available for interrogation by a police officer as and when required.
- The person cannot make any inducement, threat, or promise, directly or indirectly, to any person acquainted with the facts of the case to dissuade him from disclosing them to the court or the police.
- The person shall not leave India without the previous permission of the court.
- Such other conditions may be imposed under sub-section (3) of section 437 “as if the bail were granted under that section”.



Rajasthan govt proposes a Bill to protect advocates

Why in News

The Rajasthan government has recently tabled the Rajasthan Advocates Protection Bill, 2023 in the state legislative Assembly.

Important Points

- The Advocates Protection Bill 2021 was issued by the Bar Council of India on July 2, 2021. A seven-member team was formed to draught the law, with the challenges and difficulties encountered by advocates and their families in mind.

About the Bill:

- The Bill provides for the prevention of offenses against advocates, such as assault, grievous hurt, criminal force and criminal intimidation, along with damage or loss to their property.
- The objective of the Bill is to prohibit increasing “violence” and “false implications” against advocates in the state, resulting in the “deterioration of law and order” and “delay in the justice system” by enacting an effective law that makes such offenses cognizable in the territory of Rajasthan.
- Section 3 of the Bill says that any act of assault, grievous hurt, criminal force, and criminal intimidation against an advocate shall be an offense. The Act also deems these offenses as cognizable, indicating that arrests can be made without a warrant. However, such an Act should be in connection with the “discharge of duties of the advocate in the court premises.”
- The Bill aims to provide police protection to an advocate, based on a report made to the police, for the

commission of offenses against him, as defined in Section 3.

- However, protection can only be given if the police deem it fit, and in a manner as prescribed in the rules.
- This bill extends to “advocates” in the State of Rajasthan.
- The Bill assigns the term “advocate” the same meaning accorded to it under Section 2(1)(a) of the Advocates Act, 1961, which defines it as an advocate entered in any role under the provisions of this Act.
- Section 5 deals with penalties for various offenses under the Bill. Section 5(1) punishes assault or criminal force against an advocate with a maximum of two years imprisonment, along with a fine of up to Rs 25,000.
- On the other hand, Section 5(2) punishes the act of voluntarily causing grievous hurt to an advocate with a maximum of seven years imprisonment and a fine of up to Rs 50,000.
- Meanwhile, Section 5(3) punishes the voluntary commission of the offense of criminal intimidation against an advocate with a maximum of two years imprisonment and a fine of up to Rs 10,000.
- However, if the threat is intended to cause death, grievous hurt, destruction of any property by fire, or constitutes an offense punishable with death or life imprisonment, then the punishment can extend to seven years with a fine of up to Rs 20,000.
- The Bill states that every offence punishable under this Act shall be compoundable by the aggrieved person with the permission of the Court.
- Compoundable offenses are those which can be conciliated by the parties under dispute, without requiring the permission of the court.
- The Bill seeks to provide compensation to advocates under Section 8, which states that when a Court imposes a sentence of fine or any other sentence of which fine forms a part, the Court may, when passing judgment, order such amount of the fine recovered to be paid as compensation to the advocate.
- Moreover, Section 10 states that in addition to the punishment specified in Section 5, the offender, “in appropriate cases”, shall also be liable to pay for the loss or damage caused to an advocate’s property, as may be determined by the court. The offender will also be liable to reimburse the medical expenses incurred by an advocate.
- Section 9 of the Bill provides for the prosecution of advocates themselves if a report of cognizable offense is received from their client or opposing client against an act done by the advocate, during the discharge of their professional duties.
- The complaint may be registered only after an inquiry has been conducted by “a police officer not below the rank of Deputy Superintendent of Police” within seven days. If a case is registered, its written information shall be sent to the Bar Council of Rajasthan.
- If an advocate misuses the provisions of this Act or uses them for malicious purposes or makes a false complaint under the Act, they can face imprisonment for up to 3 years, with or without a fine.

Double Jeopardy

Why in News

The concept of double jeopardy has come to light amidst a Delhi Court sentenced two former Delhi Jal Board (DJB) officials in a money laundering case registered by the Enforcement Directorate (ED) in 2009, against which it filed a complaint after a delay of 11 years, in 2021.

Important Points

What is double jeopardy?

- “Double jeopardy” comes from the Latin maxim “Nemo bis punitur pro eodem delicto”, which means that no one can be tried for the same offence twice. It has existed since the days of the Greeks and Romans, even finding a mention in the Justinian code, Canon law, Common Law, and the Fifth Amendment.
- In India, this doctrine existed even before the Constitution came into being. A case in point would be the now-repealed General Clauses Act, of 1897 and Section 300 of the Criminal Procedure Code of 1973, which says that a person once convicted or acquitted cannot be tried for the same offence.
- In its 2022 ruling in ‘T.P. Gopalakrishnan vs. State of Kerala,’ the Supreme Court went so far as to say that Section 300 bars the trial of a person not just for the same offence but also for any other offence on the same facts.
- The doctrine of double jeopardy is enshrined in the Indian Constitution under Article 20 (2), which says,

“No person shall be prosecuted and punished for the same offence more than once.”

- It guarantees immunity from double punishment and bars a second prosecution only where the accused has been both prosecuted and punished for the same offence previously, as held by the Supreme Court in its 1954 ruling in ‘Venkataraman SA vs. Union of India’.
- However, in its 1996 ruling in ‘AA Mulla vs State of Maharashtra’, the apex court held that Article 20(2) does not bar subsequent trials if the ingredients of the offences in the previous and subsequent trials are distinct. Moreover, there are certain conditions for the application of Article 20 (2).

The conditions for the application of Article 20(2)

- There must have been previous proceedings before a court of law or a judicial tribunal of competent jurisdiction.
- The person must have been prosecuted in the previous proceedings.
- The conviction or acquittal in the previous proceeding must be in force at the time of the second trial.
- The offence which is a subject matter of the second proceeding must be the same as that of the first proceeding for which the accused was prosecuted and punished.
- The “offence” must be an offence as defined in Section 3(38) of the General Clauses Act which defines it as any act or omission made punishable by any law for the time being in force. The prosecution must also be valid and not null, void, or abortive.
- The subsequent proceeding must be a fresh proceeding where an accused is being prosecuted for the same offence twice. Hence, this clause does not apply when the later proceedings are a continuation of the previous proceedings, nor does it bar a retrial on appeal with a direction to frame charges, provided the retrial is for the same offence or offence as the original trial.

Why did the court allow ED’s case after 11 years?

- The Prevention of Money Laundering Act does not provide for a limitation period for money laundering. This indicates that the law laid down in Section 468 of the CrPC, which states that there is no limitation period for offences punishable with three years imprisonment or more, will apply.
- In this case, the court observed that the accused were nearing the completion of their sentence when the “ED suddenly filed the present complaint under the PMLA Act” on March 30, 2021, for the commission of offences under Section 4 read with Section 3. The former deals with punishment for money laundering, stipulating a minimum of three years imprisonment, while the latter defines “money laundering”.
- That the ED registered its Enforcement Case Information Report (ECIR) on December 17, 2009, and took about 11 years to file the complaint in court was also observed by the court and contested by the accused.
- While the accused pleaded for leniency on grounds of double jeopardy and delay in ED filing the complaint, the court said that the wording of Section 4 of the PMLA Act seeks mandatory rigorous punishment of at least three years and the accused can’t be given the benefit of Probation of Offenders Act.
- The court also acknowledged the possibility of imposing a concurrent sentence, had the ED filed its complaint during the pendency of the CBI case.
- However, it said that it was not bound to do so, saying, No doubt, this strong possibility of awarding concurrent sentences now has been snatched from the accused persons due to delayed complaint filed by ED but there was no limitation for filing the present complaint case.



National Security Act, 1980

Why in News

NSA invoked against Amritpal and aides.

Important Points

- National Security Act has been invoked in the case of self-styled Sikh preacher and on-the-run Waris Punjab De chief Amritpal Singh.
- During a hearing regarding a habeas corpus petition filed by the legal advisor of Waris Punjab De for

requesting the court to direct the respondents to produce Amritpal Singh before it.

- Four aides of Singh – Gurmeet Singh Bukkanwala, Basant Singh, Bhagwant Singh alias Pardhan Mantri Bajjoke and Daljit Singh Kalsi – who were flown to a prison in Dibrugarh, Assam, have also been held under the Act.

What is National Security Act, 1980?

- The National Security Act was passed by the Parliament in 1980 and has been amended several times since then.
- NSA “empowers the state to detain a person without a formal charge and without trial”.
- Under the Act, a person is taken into custody to prevent them from acting in any manner prejudicial to “the security of the state” or for “maintenance of the public order”.
- It is an administrative order passed either by the Divisional Commissioner or the District Magistrate (DM) – and not detention ordered by police based on specific allegations or for a specific violation of the law.
- Even if a person is in police custody, the District Magistrate can slap NSA against them. Or, if a person has been granted bail by a trial court, they can be immediately detained under the NSA.
- If the person has been acquitted by the court, the same person can be detained under the NSA.
- The law takes away an individual’s constitutional right to be produced before the magistrate within 24 hours, as is the case when the accused is in police custody.
- The detained person also does not have the right to move a bail application before a criminal court.

What are the grounds for detention?

- NSA can be invoked to prevent a person from acting in any manner prejudicial to the defence of India, relations of India with foreign powers or the security of India.
- Among others, it can also be applied to prevent a person from acting in any manner prejudicial to the maintenance of supply and services essential to the community.
- An individual can be detained without a charge for a maximum period of 12 months.
- The detained person can be held for 10 to 12 days in special circumstances without being told the charges against them.

What is the protection available under the Act?

- The Indian Constitution allows both preventive detention and the right of protection against arrest and detention in certain cases, enshrined under Article 22 of the Constitution.
- However, Article 22(3) provides that the rights available to an arrested person will not be applicable in case of preventive detention, thus an exception is carved out.
- One crucial procedural safeguard under the NSA is granted under Article 22(5), where all the detained persons have the right to make an effective representation before an independent advisory board, which consists of three members; and the board is chaired by a member who is, or has been, a judge of a high court.
- Notably, in a 2021 investigation it was found that in all the 120 cases before the Allahabad High Court in the previous three years, the board upheld the detention
- The DM who passes the detention order is protected under the Act: no prosecution or any legal proceeding can be initiated against the official who carries out the orders.
- Therefore, the writ of habeas corpus is the available remedy under the Constitution against the state’s power of taking people into custody under the NSA. Therefore, a habeas corpus petition has been filed in Singh’s case in Punjab and Haryana High Court by Imaan Singh Khara, the legal advisor of Waris Punjab De.

What the top court says

- The Supreme Court in earlier cases had held that to prevent “misuse of this potentially dangerous power, the law of preventive detention has to be strictly construed”, and “meticulous compliance with the procedural safeguards” has to be ensured.



What is the criticism against NSA?

- The human rights groups have said in the past that the Act vitiates Article 22 of the Constitution and various provisions under the CrPC that safeguard the interest of an arrested person, namely that the arrested person should be informed regarding the ground of arrest and his right to consult a legal practitioner.

- Further, under the CrPC, the arrested person has to be produced before the nearest Magistrate within 24 hours, but the NSA carves out an exception.
- Some human rights groups argue that it is often misused by authorities to silence political opponents or those who are critical of the government.
- There have been calls for the Act to be repealed or amended to prevent its abuse.
- Act cannot be construed to be a draconian law as it protects the larger interest of the state, and is therefore likely to stay.

Muslim Personal Law (Shariat) Application Act, 1937

Why in News

Nearly three decades after they were first married according to religious laws, a Muslim couple in Kerala's Kasaragod registered their marriage under the secular Special Marriage Act.

Important Points

Why is the couple registering their marriage again?

- The couple says this is to avoid their inheritance being split under the Shariat legal code, and to ensure only their three daughters can be their legal heirs as per civil law.



Muslim Personal Law (Shariat) Application Act, 1937

- Inheritance for Muslims in India is governed by this Act. It is a short statute with five provisions only.
- This law deals with marriage, succession, inheritance and charities among Muslims.
- Previously, this Act was not applicable in the North-West Frontier Province as they had their own legislation with divergent traits by the name of NWFP Muslim Personal Law (Shariat) Application Act, 1935.
- But as of now, the Act of 1937 extends to the whole of India as has been provided under Section 1(2) of the Act.
- This legislation that codifies Shariat recognises two kinds of legal heirs- sharers and residuaries.
- A legal heir who gets a share in the inheritance are twelve categories- (1) Husband, (2) Wife, (3) Daughter, (4) Daughter of a son (or son's son or son's son and so on), (5) Father, (6) Paternal Grandfather, (7) Mother, (8) Grandmother on the male line, (9) Full sister (10) Consanguine sister (11) Uterine sister, and (12) Uterine brother.
- Residuary heirs can be aunts, uncles, nieces, nephews and other distant relatives. The value of their share depends on several scenarios.
- For example, a wife takes 1/8 share of her husband's property upon his death if they have lineal descendants. If not, she takes 1/4th share.
- Daughters cannot inherit more than half of what the sons inherit.
- The estate of a Muslim can only pass to a Muslim, which prejudices the wife or children following another religion.
- Under Shariat law, only 1/3 of the estate can be willed in favour of anyone. The remaining will still have to be divided as per the complex religious law. Therefore, a Muslim couple has no way under the religious law to make someone their sole heirs.

IEA's annual Methane Global Tracker report

Why in News

International Energy Agency's (IEA) has published the annual Methane Global Tracker report recently

Important Points

- According to the report, fossil fuel companies emitted 120 million metric tonnes of methane into the atmosphere in 2022, only slightly below the record highs seen in 2019.
- It added that these companies have done almost nothing to curb the emissions despite their pledges to find and fix leaking infrastructure.
- The implementation of such measures would cost less than three per cent of the net income received by the oil and gas industry in 2022, but fossil fuel companies failed to take any substantial action regarding the issue.
- It shows that some progress is being made but that emissions are still far too high and not falling fast enough – especially as methane cuts are among the cheapest options to limit near-term global warming.
- The energy sector accounts for around 40 per cent of the total average methane emissions from human activity, as oil and natural gas companies are known to release methane into the atmosphere when natural gas is flared or vented.
- The greenhouse gas is also released through leaks from valves and other equipment during the drilling, extraction and transportation process.
- More than 260 billion cubic metres (bcm) of natural gas (mostly composed of methane) is wasted through flaring and methane leaks globally today.
- Although it's impossible to avoid all of this amount, the right policies and implementation can bring 200 bcm of additional gas to markets.
- In the oil and gas sector, emissions can be reduced by over 75 per cent by implementing well-known measures such as leak detection and repair programmes and upgrading leaky equipment.
- It further mentioned that 80 per cent of the available options to curb the release of methane could be implemented by the fossil fuel industry at net zero cost.
- Ultimately, reducing 75 per cent of the wastage of natural gas could lower global temperature rise by nearly 0.1 degree Celsius by mid-century.
- This would have the same effect on the soaring global temperatures as immediately stopping greenhouse gas emissions from vehicles such as cars, trucks, buses and two- and three-wheeler vehicles across the world.
- However, fossil fuel companies have done little to tackle the problem.



How are methane emissions driving climate change?

- Methane is a greenhouse gas, which is responsible for 30 per cent of the warming since preindustrial times, second only to carbon dioxide. A report by the United Nations Environment Programme observed that over a 20-year period, methane is 80 times more potent at warming than carbon dioxide.
- In recent years, scientists have repeatedly sounded the alarm regarding the increasing amount of methane in the atmosphere.
- In 2022 the US National Oceanic and Atmospheric Administration (NOAA) said that the atmospheric levels of methane jumped 17 parts per billion in 2021, beating the previous record set in 2020.

International Energy Agency

- It is a Paris-based autonomous intergovernmental organisation, established in 1974, that provides policy recommendations, analysis and data on the entire global energy sector, with a recent focus on curbing carbon emissions and reaching global climate targets, including the Paris Agreement.
- The 31 member countries and 11 association countries of the IEA represent 75% of global energy demand.
- The IEA was set up under the framework of the Organisation for Economic Co-operation and Development (OECD) in the aftermath of the 1973 oil crisis to respond to physical disruptions in global oil supplies, provide data and statistics about the global oil market and energy sector, promote energy savings and conservation, and establish international technical collaboration on innovation and research.
- Since its founding, the IEA has also coordinated use of the oil reserves that its members are required to hold.
- In subsequent decades, the IEA's role expanded to cover the entire global energy system, encompassing traditional fuels such as gas, and coal as well as cleaner and fast-growing energy sources and technologies including renewable energy sources; solar photovoltaics, wind power, biofuels as well as nuclear power, and hydrogen, and the critical minerals needed for these technologies.
- The core activity of the IEA is providing policy advice to its 31 member states, as well as to its 11 Associated countries, which include Argentina, Brazil, China, India, Indonesia, South Africa, Ukraine, Singapore, Thailand, Egypt and Morocco to support their energy security and advance their transition to clean energy.
- The Agency publishes policy recommendations and solutions to help all countries ensure secure, affordable and sustainable energy, as well as analysis, roadmaps, policy reviews, detailed data on more than 150 countries.
- Recently, it has focused in particular on supporting global efforts to accelerate clean energy transition, mitigate climate change, and reach net zero emissions.

Clean Plant Program

Why in News

The Union Government is planning to launch an Atmanirbhar Clean Plant Program with an outlay of Rs. 2,200 crore.

Important Points

Clean Plant Program

- It seeks to boost availability of disease-free, quality planting material for high value horticultural crops.
- Under this program, the Centre plans to set up 10 'Clean Plant Centres', on the lines of those in developed countries such as the US, Netherlands and Israel, to boost domestic production of the selected crops.
- The concept of Clean Plant Centres is unique in itself and does not exist in India.
- 10 centres will be established for fruit crops like apple, walnut, almond, grapes, mango, pomegranate, among others, with an overall budget of Rs 2,200 crore in the next seven years till 2030.
- The Clean Plant Centres will provide services of disease diagnostic, therapeutics, multiplying of plants and generation of mother plants.
- The centres will be fully funded by the Centre.
- It will be implemented in a PPP mode in partnership with research organisations, agriculture universities and private sector partners.
- The National Horticulture Board (NHB) will anchor the clean plant programme.

Demand for imported planting material in India

- The demand for imported planting material of various fruit plants has risen sharply over the years.
- According to a source, the permissions given by the EXIM committee for import of planting material of fruits during 2018-2020 show that in 2018, 21.44 lakh apple plants were imported, which increased to 49.57 lakh in 2020.
- Besides, fruit plants of banana, date palm, kiwi, pomegranate, raspberry, strawberry, walnut, winegrape, grape, guava, olive, peach, pear and plum plants are also being imported in the country.

Cultural burns by indigenous Australians

Why in News

New research by the University of the Sunshine Coast has found that traditional fire burning practices or ‘cultural burns’ by indigenous Australians can help protect the iconic koala.

Important Points

About cultural burns

- The ‘cultural burns’ were found to be cooler, lower and slower than ‘hot fires.’
- Such fire activity encouraged the regeneration of suitable native plants. On the other hand, they controlled species like banksias and wattle to reduce the risk of fire reaching the canopy where koalas lived.
- The research results showed that there were no negative impacts on the densities or stress levels of the animals during or after the traditional burning method.
- The United Nations had taken note of burning practices and techniques of indigenous peoples around the world as a method to control wildfire incidents in a report of 2022 on increasing incidences of fires globally.
- The report noted that indigenous and traditional knowledge of land management in many regions — particularly the use of fire to manage fuel, including for wildfire mitigation — can be an effective way of reducing hazard.
- The document had cited the example of Australian Aborigines’ use of fire to create mosaic landscapes for hunting and gathering purposes.
- This practice broke up the continuity of fuels and inhibited the extensive spread of wildfires.



About koala

- A koala or koala bear is an arboreal herbivorous marsupial native to Australia.
- It is the only extant representative of the family Phascolarctidae and its closest living relatives are the wombats.
- It is easily recognisable by its stout, tailless body and large head with round, fluffy ears and large, spoon-shaped nose.
- It has a body length of 60–85 cm and weighs 4–15 kg.
- Its fur colour ranges from silver grey to chocolate brown.
- According to fossil records, Koala species have inhabited parts of Australia for at least 25 million years. But today, only one species remains i.e., the Phascolarctos cinereus.
- They were classified as “vulnerable” only in 2012.
- They are found in the wild in the southeast and eastern sides of Australia in coastal Queensland, New South Wales, South Australia and Victoria.
- They inhabit open Eucalyptus woodland, the leaves of these trees make up most of their diet
- They are asocial animals, and bonding exists only between mothers and dependent offspring.
- Because of its small brain, the koala has a limited ability to perform complex, unfamiliar behaviours.
- Its vision is not well developed, and its relatively small eyes are unusual among marsupials in that the pupils have vertical slits.

151st anniversary of Yellowstone National Park

Why in News

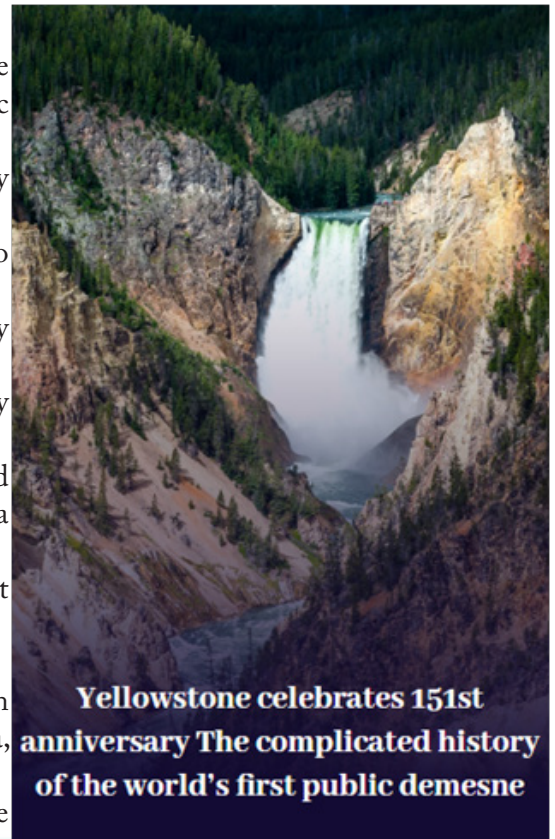
Yellowstone National Park in US has celebrated its 151st anniversary recently.

Important Points

Yellowstone National Park

- It is a national park located in the western United States, largely in the northwest corner of Wyoming and extending into Montana and Idaho.
- It spans an area of over 9,000 sq. km comprising lakes, canyons, rivers, iconic geothermal features such as the Old Faithful geyser, and mountain ranges.

- It was established by the U.S. Congress on March 1, 1872.
- Native Americans were hunting and gathering here for at least 11,000 years. They were pushed out by the government after the park was established.
- In the lead up to Yellowstone becoming a national park, three major expeditions – in 1869, 1870 and 1871 – raised public awareness of the area's natural beauty.
- The last of these, known as the Hayden expedition, was particularly important.
- Yellowstone was the first national park in the U.S. and is also widely held to be the first national park in the world.
- The park is known for many geothermal features, especially Old Faithful geysers.
- It is situated in a region that has been volcanically and seismically active for tens of millions of years.
- Tectonic movement of the North American Plate has thinned Earth's crust in the area, forming a hot spot (a place where a dome of magma, or molten rock, comes close to the surface).
- While it represents many types of biomes, the subalpine forest is the most abundant.
- It is part of the South Central Rockies forest ecoregion.
- Yellowstone Lake is one of the largest high-elevation lakes in North America and is centered over the Yellowstone Caldera, the largest supervolcano in North America.
- Over half of the world's geysers and hydrothermal features are in Yellowstone, fueled by this ongoing volcanism.
- In 1978, Yellowstone was named a UNESCO World Heritage Site.
- The rivers of the Snake-Columbia basin, Green-Colorado basin, and Missouri River Basin all begin as snow on the Continental Divide as it weaves across Yellowstone's peaks and plateaus.
- Grizzly bears, wolves, and free-ranging herds of bison and elk live in this park.
- The Continental Divide of North America runs diagonally through the southwestern part of the park.
- The highest point in the park is atop Eagle Peak and the lowest is along Reese Creek.
- The most prominent summit on the Yellowstone Plateau is Mount Washburn.
- It has one of the world's largest petrified forests, trees which were long ago buried by ash and soil and transformed from wood to mineral materials.



Yellowstone celebrates 151st anniversary The complicated history of the world's first public demesne

World Wildlife Day (WWD) 2023

Why in News

March 3 is known as World Wildlife Day (WWD), marked annually to draw attention to issues of conservation of flora and fauna.

Important Points

- In 2013, the United Nations General Assembly (UNGA) proclaimed March 3 as the UN World Wildlife Day to celebrate and raise awareness of protecting the world's wild animals and plants.
- This was as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was signed in 1973 on this day.
- March 3 marks the 50th anniversary of CITES' establishment.
- CITES is considered a landmark agreement on conservation that focuses on ensuring the sustainability of endangered species.
- The theme for 2023 is 'Partnerships for Wildlife Conservation'.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (or CITES)

- CITES is an international agreement between governments.
- Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.

- Currently, there are 184 parties to the convention, including India.
- The CITES Secretariat is administered by UNEP (The United Nations Environment Programme) and is located in Geneva, Switzerland.
- The Conference of the Parties to CITES is the supreme consensus-based decision-making body of the Convention and comprises all its parties.
- The species covered under CITES are listed in three Appendices, according to the degree of protection they need.
 - Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted rarely, only in “exceptional circumstances”, such as gorillas, and lions from India.
 - Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled to ensure their survival. For example, certain kinds of foxes and Hippopotamuses.
 - Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade, like the Bengal fox or the Golden Jackal from India. Different procedures are given category-wise to engage in the trade of species in each of the lists.
- In India, apart from the Union Ministry of Environment, Forests and Climate Change, the Wildlife Crime Control Bureau is a statutory body under the Ministry that is especially meant to combat organised wildlife crime in the country.
- It assists and advises the customs authorities in the inspection of the consignments of flora and fauna as per the provisions of the Wild Life Protection Act of 1972, CITES and the export and import policy governing items.



Constitution of Greater Panna Landscape Council (GPLC)

Why in News

As part of the Ken-Betwa Link Project (KBLP), the GPLC has been constituted under the chairmanship of Chief Secretary, Govt. of Madhya Pradesh with members from all the stakeholders.

Important Points

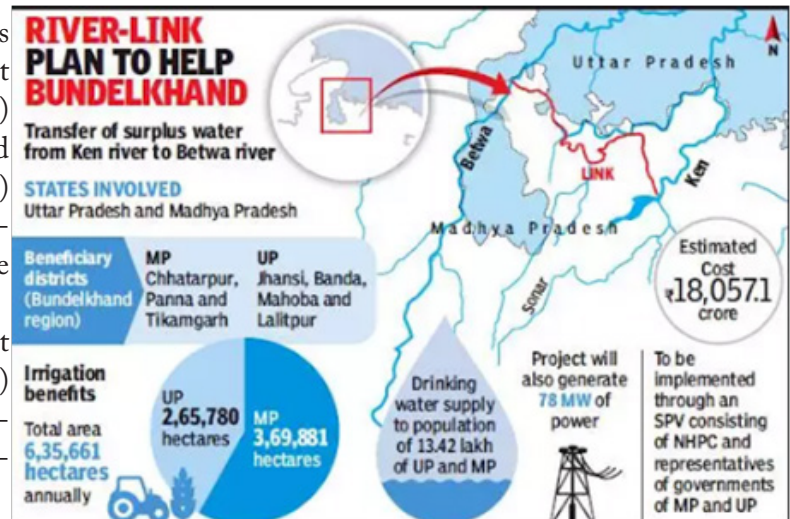
About GPLC

- To ensure systematic and time bound implementation of the Greater Panna Landscape Management plan, the GPLC has been constituted.
- The goal of the GPL and the council is to ensure a “win-win” situation for conservation through integration with the development process based on a balanced approach and considering the diverse stakes.
- The broad objectives are-
- To enable betterment of habitat, protection, and management for flagship species viz. tiger, vulture, and gharial in the landscape.
- To consolidate the landscape for overall biodiversity conservation through spatial prioritization and well-being of the forest dependent communities.
- To provide species-specific and site-specific monitoring strategies under the integrated landscape management in context with feedback loop and adaptive management options.
- Under KBLP, a comprehensive Integrated Landscape Management Plan (ILMP) has been prepared for the conservation of wildlife and biodiversity in Panna Tiger Reserve (PTR) & surrounding areas.

Ken-Betwa Link Project

- Ken-Betwa Link Project (KBLP), the first interlinking of rivers project under National Perspective Plan (NPP) taken for implementation, would be a game-changer for the socio-economic prosperity of the Bundelkhand region, which faces recurrent drought situation.

- The project is aimed at not only providing water security in the Bundelkhand but also ensuring the overall conservation of the region and specially for landscape dependent species such as tiger, vulture and gharial.
- Apart from taking mitigation measures as per approved Environmental Management Plan, the Wildlife Institute of India (WII) has prepared a comprehensive Integrated Landscape Management Plan (ILMP) for the conservation of wildlife and biodiversity not only in Panna Tiger Reserve (PTR) but also in surrounding areas.
- The Integrated Landscape Management Plan in Greater Panna Landscape (GPL) is one of the major and unique conservation measures being initiated in the conservation history of India.



Certification of Forests

Why in News

Several countries and corporations are keen to present an environment-friendly image; this is where the forest certification industry comes in.

Important Points

- It offers a multi-layer audit system that seeks to authenticate the origin, legality, and sustainability of forest-based products such as timber, furniture, handicraft, paper and pulp, rubber, and many more.
- The approximately three-decade-old global certification industry began as a way to establish, through independent third-party audits, whether forests were being managed in a sustainable manner.
- Over the years, a range of certifications have come to be offered for various activities in the forestry sector.
- There are two major international standards (there are a few other less widely accepted ones as well) for sustainable management of forests and forest-based products.
- One has been developed by Forest Stewardship Council, or FSC.
- The other by Programme for Endorsement of Forest Certifications, or PEFC.
- FSC certification is more popular and in demand, and also more expensive.
- Organisations like FSC or PEFC are only the developers and owners of standards — like, for example, the International Organisation of Standardisation (ISO) or Bureau of International Standards (BIS).
- They are not involved in the evaluation and auditing of the processes being followed by the forest managers or manufacturers or traders of forest-based products.
- That is the job of certification bodies authorised by FSC or PEFC.
- The certification bodies often subcontract their work to smaller organisations. PEFC does not insist on the use of its own standards.
- Instead, like its name suggests, it endorses the 'national' standards of any country if they are aligned with its own.
- Two main types of certification are on offer: forest management (FM) and Chain of Custody (CoC).
- Co-C certification is meant to guarantee the traceability of a forest product like timber throughout the supply chain from origin to market.

Forest certification in India

- The forest certification industry has been operating in India for the last 15 years.
- Currently, forests in only one state i.e., Uttar Pradesh are certified.
- Forty one divisions of the UP Forest Corporation (UPFC) are PEFC-certified, meaning they are being managed according to standards endorsed by PEFC.
- These standards have been developed by the New Delhi-based nonprofit Network for Certification and Conservation of Forests (NCCF).
- Some other states too obtained certification, but subsequently dropped out.

- The Bhamragad forest division in Maharashtra was the first to obtain FSC certification for forest management.
- Later, two divisions in Madhya Pradesh and one in Tripura also obtained FSC certification. UPFC too had FSC certification earlier.
- However, all of these expired over time. Only UPFC extended its certification but with PEFC.
- Many agroforestry projects, such as those run by ITC, and several paper mills too have forest management certification. The forests here are meant for captive use of the industry.

India-specific standards

- India allows the export of only processed wood, not timber. In fact, the timber harvested from Indian forests is not enough to meet the domestic demand for housing, furniture, and other products.
- The demand for wood in India is 150-170 million cubic metres annually, including 90-100 million cubic metres of raw wood.
- The rest goes mainly towards meeting the demand for paper and pulp.
- India's forests contribute just about five million cubic metres of wood every year.
- Almost 85 per cent of the demand for wood and wood products is met by trees outside forests (ToF). About 10 per cent is imported. India's wood import bill is Rs 50,000-60,000 crore per year.
- Since ToF are so important, new certification standards are being developed for their sustainable management.
- PEFC already has certification for TOF and in 2022, FSC came up with India-specific standards that included certification for ToF. Environment Minister Bhupender Yadav launched the FSC's India standards in June 2022.

The Govt's own standards

- Long before private certification bodies set up operations in India, the government had moved to define national standards for the management of forests.
- Based on the recommendations of an expert committee in 2005, the Environment Ministry had asked relevant institutions like the Bhopal-based Indian Institute of Forest Management to draw up national forest standards. However, the effort did not come to fruition.
- When the NCCF came into being in 2015, offering PEFC certification in India, the Environment Ministry nominated an officer on the governing board, lending it official legitimacy. But the nomination was later withdrawn.
- In 2022 the Ministry associated itself with FSC, by launching its new India standards.

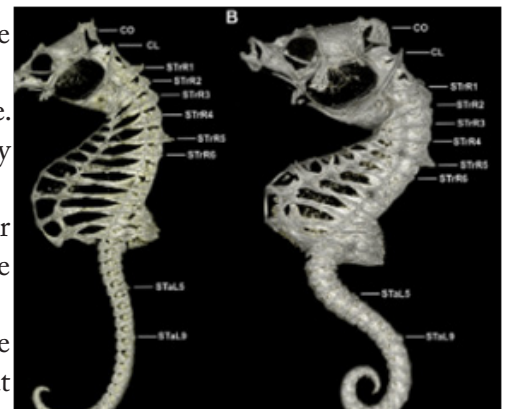
Migration of great seahorses

Why in News

According to new study, the *Hippocampus kelloggi*, one of 12 species of fish with a horse-like head found in the Indo-Pacific region, could be migrating toward coastal Odisha due to fishing pressures.

Important Points

- Extensive fishing off the Coromandel coast could be forcing the great seahorse to migrate laboriously toward Odisha.
- Fishing is less intense in the Bay of Bengal off the Odisha coastline. But the shallow coastal ecosystem of the eastern Indian State may not be the new comfort zone for the fish with a horse-like head.
- The study was based on a specimen of a juvenile great seahorse, or *Hippocampus kelloggi*, caught in a ring net and collected from the Ariyapalli fish landing centre in Odisha's Ganjam district.
- But the great seahorse is not migrating in large numbers, as the Odisha coast does not have coral reefs or seagrass meadows that the species can call home, except within the Chilika region
- Despite the ban on fishing and trading activities on seahorses from 2001, clandestine fishing and trading still take place in India.
- This creates immense pressure on the seahorse populations that have a high dependency on local habitats to maintain their extensive and long-life history traits.



About seahorses

- A seahorse (also written sea-horse and sea horse) is any of 46 species of small marine fish in the genus Hippocampus.
- Having a head and neck suggestive of a horse, seahorses also feature segmented bony armour, an upright posture and a curled prehensile tail.
- Seahorses are mainly found in shallow tropical and temperate salt water throughout the world, from about 45°S to 45°N.
- They live in sheltered areas such as seagrass beds, estuaries, coral reefs, and mangroves.
- Seahorses range in size from 1.5 to 35.5 cm. They are named for their equine appearance, with bent necks and long snouted heads and a distinctive trunk and tail.
- Although they are bony fish, they do not have scales, but rather thin skin stretched over a series of bony plates, which are arranged in rings throughout their bodies.
- Each species has a distinct number of rings. The armor of bony plates also protects them against predators, and because of this outer skeleton, they no longer have ribs.
- The coastal ecosystems of India house nine out of 12 species found in the Indo-Pacific, one of the hotspots of seahorse populations that are distributed across diverse ecosystems such as seagrass, mangroves, macroalgal beds, and coral reefs.
- These nine species are distributed along the coasts of eight States and five Union Territories from Gujarat to Odisha, apart from Lakshadweep and the Andaman and Nicobar Islands.
- The population of the great seahorse, which is among the eight species tagged 'vulnerable', is declining due to its overexploitation for traditional Chinese medicines and as ornamental fish, combined with general destructive fishing and fisheries bycatch
- Seahorses are poor swimmers but migrate by rafting clinging to floating substrata such as macroalgae or plastic debris for dispersal by ocean currents – to new habitats for successful maintenance of their population.

Hot lightning

Why in News

According to a new study, Climate change might lead to more wildfire-inducing 'hot lightning' strikes.

Important Points

- The the study titled, 'Variation of lightning-ignited wildfire patterns under climate change', has been done by researchers from Spain and Germany.
- According to the researchers, lightning is a major cause of triggering wildfires and is responsible for producing the largest wildfires in some regions, including the Western United States.
- Lightning-caused wildfires are dangerous as they spread rapidly before a strong response can be implemented and release substantial amounts of carbon, nitrogen oxides and other trace gases into the atmosphere.
- Although previous studies have demonstrated that climate change might lead to an increase in lightning strike incidents, the latest research is the first time that scientists have focused on the relationship between "hot lightning" strikes and rising global temperatures.
- Moreover, they have also examined how this form of lightning might affect the incidents of wildfires across the world.
- The researchers analysed 5,858 selected lightning-ignited fires based on satellite images of US wildfires between 1992 and 2018 and found that approximately 90 per cent of them might have started by "hot lightning" strikes.
- Also known as long continuing current (LCC), this type of lightning strike can last from around 40 milliseconds to nearly a third of a second.
- Explaining why "hot lightning" has more potential of triggering a wildfire than typical lightning, the new study, told that lightning with continuing currents can transport more energy from cloud to ground than typical lightning.
- When lightning with continuing currents attach to ground or vegetation, they produce more Joule heating and higher temperature than typical lightning, increasing the probability of ignition.
- With the help of computer simulations, the researchers also looked at the frequency of "hot lightning" strikes and observed that as the atmosphere warms, there might be an increase of 41 per cent in the incidents of LCC strikes by 2090. This means that the rate of such lightning flashes could jump from three strikes per second globally to four strikes per second.

- Meanwhile, the frequency of all cloud-to-ground strikes might increase to nearly eight flashes per second, a 28 per cent jump.
- According to the study, the areas that might witness a significant increase in wildfires triggered by the LCC strikes are Southeast Asia, South America, Africa, Australia, North America and Europe.
- The researchers predicted this after accounting for changes in precipitation, humidity and temperature.
- However, many northern polar regions might see a decrease in wildfires as rainfall is projected to increase while “hot lighting” rates remain constant.

What is lightning and how does it occur?

- Lightning is a rapid and massive electrical discharge that takes place between storm clouds and the ground, or within the clouds themselves.
- Scientists believe that for lightning to occur, positive and negative charges must separate within a cloud. This happens when the water droplets in the bottom part of the cloud are moved upwards, where the much colder atmosphere freezes them into small ice crystals.
- As these small ice crystals continue to go up, they gain more mass and eventually become so heavy that they start to fall down to Earth.
- This causes a system in which ice crystals going down collides with the water vapours coming up, leading to the accumulation of positive charges on the top of the cloud and negative charges gathering at the base, while the atmosphere between them in the cloud acts as an insulator.
- When the positive and negative charges grow large enough, their strength overpowers the insulating properties of the properties.
- As a result, the two kinds of charges meet with each other and produce lightning.
- Although most of the lightning takes place within the clouds, sometimes it is directed towards Earth also.
- With the base of the cloud becoming negatively charged, positive charges start accumulating on tall objects, like trees, poles and buildings.

India to launch International Big Cat Alliance (IBCA)

Why in News

India has proposed to launch a mega global alliance under its leadership to protect big cats and assured support over five years with guaranteed funding of \$100 million (over Rs 800 crore).

Important Points

About IBCA

- Proposed alliance will work towards the protection and conservation of the seven major big cats — tiger, lion, leopard, snow leopard, puma, jaguar and cheetah.
- Its purpose is to provide a platform for dissemination of information on benchmarked practices, capacity building, resources repository, research and development, awareness creation etc.
- Its major activities will include advocacy, partnership, knowledge e-portal, capacity building, eco-tourism, partnerships between expert groups and finance tapping.
- The IBCA's governance structure will comprise a General Assembly consisting of all member countries, a council of at least seven but not more than 15 member countries elected by the General Assembly for a term of 5 years, and a Secretariat.
- Upon the recommendation of the Council, the General Assembly will appoint the IBCA Secretary General for a specific term.
- After the first five years, which will be supported by India's total grant assistance of \$100 million, the IBCA is expected to sustain itself through membership fees, and contributions from bilateral and multilateral institutions and the private sector.
- Membership to the alliance will be open to 97 range countries, which contain the natural habitat of these big cats, as well as other interested nations, international organisations, etc.
- The alliance is inspired by the arrival of cheetahs in 2022 from Namibia.



ISRO's Landslide Atlas of India

Why in News

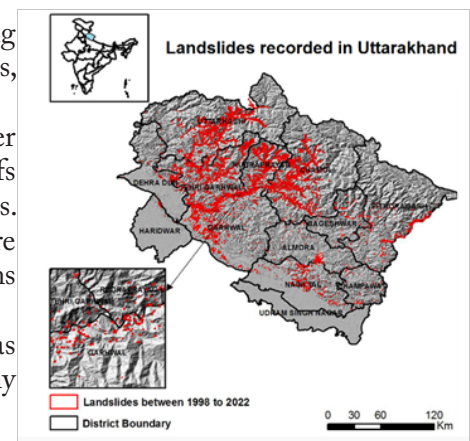
Rudraprayag and Tehri Garhwal in Uttarakhand are the most landslide-prone districts in the country, according to satellite data by the Indian Space Research Organisation (ISRO).

Important Points

- This report looked at landslide vulnerable regions in 17 states and two Union Territories of India in the Himalayas and Western Ghats.
- Rajouri, Thrissur, Pulwama, Palakkad, Malappuram, South Sikkim, East Sikkim and Kozhikode in Kerala, Jammu Kashmir and Sikkim are other high-risk districts, found Landslide Atlas of India 2023.
- According to it, all 12 districts of Himachal Pradesh prone to landslides.
- Hyderabad-based National Remote Sensing Centre created the all-India database.
- The database includes three types of landslide inventory – seasonal, event-based and route-wise for the 1998-2022 period.
- This Atlas provides the details of landslide present in Landslide provinces of India including damage assessment of specific landslide locations.
- The risk analysis in the report was based on the density of human and livestock populations, which indicates the impacts on people due to these landslides.
- The disaster in Kedarnath in 2013 and the landslides caused by the devastating Sikkim earthquake in 2011 are also included in this atlas.
- It says that between 1988 and 2022, the maximum number of landslides 12,385 were recorded in Mizoram.
- Uttarakhand followed it at 11,219, Tripura at 8,070, Arunachal Pradesh at 7,689, Jammu and Kashmir at 7,280. Kerala saw 6,039, Manipur at 5,494 and Maharashtra recorded 5,112 incidents of landslides.
- Globally, landslides rank third in terms of deaths among natural disasters. However, deforestation due to unplanned urbanisation and human greed increases the risk of such incidents.
- In 2006, about 4 million people were affected by landslides, including a large number of Indians.
- India is among the four major countries where the risk of landslides is the highest. If we look at the figures, about 0.42 million square kilometres in the country are prone to landslides, which is 12.6 per cent of the total land area of the country.
- However, the figure does not include snow-covered areas.
- Around 0.18 million sq km of the landslide-prone areas in the country are in North East Himalaya, including Darjeeling and Sikkim Himalaya.
- Of the rest, 0.14 million sq km falls in North West Himalaya (Uttarakhand, Himachal Pradesh and Jammu & Kashmir); 90,000 sq km in Western Ghats and Konkan hills (Tamil Nadu, Kerala, Karnataka, Goa and Maharashtra) and 10,000 sq km in Eastern Ghats of Aruku in Andhra Pradesh, the atlas added.
- Sudden heavy rains due to climate change are also increasing landslides.
- Around 73 per cent of landslides in the Himalayan region are attributed to heavy rains and reduced water-absorbing capacity of the soil.

What is a landslide?

- Landslides, also known as landslips, are several forms of mass wasting that may include a wide range of ground movements, such as rockfalls, deep-seated slope failures, mudflows, and debris flows.
- Landslides occur in a variety of environments, characterized by either steep or gentle slope gradients, from mountain ranges to coastal cliffs or even underwater, in which case they are called submarine landslides.
- Gravity is the primary driving force for a landslide to occur, but there are other factors affecting slope stability that produce specific conditions that make a slope prone to failure.
- In many cases, the landslide is triggered by a specific event (such as a heavy rainfall, an earthquake, a slope cut to build a road, and many others), although this is not always identifiable.
- Landslides occur when the slope (or a portion of it) undergoes some processes that change its condition from stable to unstable.
- This is essentially due to a decrease in the shear strength of the slope material, an increase in the shear stress borne by the material, or a combination of the two.
- A change in the stability of a slope can be caused by a number of factors, acting together or alone.



Global Commission on the Economics of Water

Why in News

Global Commission on the Economics of Water (GCEW) has recently released a report warning that almost a third of people live in water-stressed countries.

Important Points

GCEW report

- Human activities – from destroying forests to burning gas, oil and coal for energy – are disrupting the rainfall the world depends on, fuelling huge economic, health and social stability threats.
- New tools allow scientists to track and quantify flows of water vapour rising from rainforests like the Amazon and falling in distant places such as Argentina's soybean and wheat fields, which are experiencing worsening drought as the Amazon shrinks.
- Vapour originating from the vast plains of Kazakhstan and other parts of Central Asia also provides about half of China's water.
- But as losses of forests and other nature disrupt those flows — and climate change brings more extreme and unpredictable rainfall on a hotter planet — water security is weakening in much of the world.
- That eroding water security poses a risk to everything from food supplies to hydropower production, a key source of low-carbon energy.

About GCEW

- The Commission is convened by the Government of the Netherlands and facilitated by the Organisation for Economic Co-operation and Development (OECD).
- It was launched in May 2022 with a two-year mandate.
- The GCEW is executed by an independent and diverse group of eminent policy makers and researchers in fields that bring novel perspectives to water economics, aligning the planetary economy with sustainable water-resource management.
- Its purpose is to make a significant and ambitious contribution to the global effort to spur change in the way societies govern, use and value water.
- It seeks to develop the new thinking on economics and governance required to lead countries out of the current impasse.
- The Commission is composed of experts, community leaders and practitioners from a broad range of science, policy and front-line practice expertise from all regions of the globe, bridging disciplines, cultures and worldviews.
- The Commission's first report will be launched on 22 March at the UN 2023 Water Conference and inform the launch of a "Pact for Voluntary Commitments".

Africa's rift valley could give birth to a new ocean

Why in News

Scientists, in 2020, predicted a new ocean would be created as Africa gradually splits into two separate parts.

Important Points

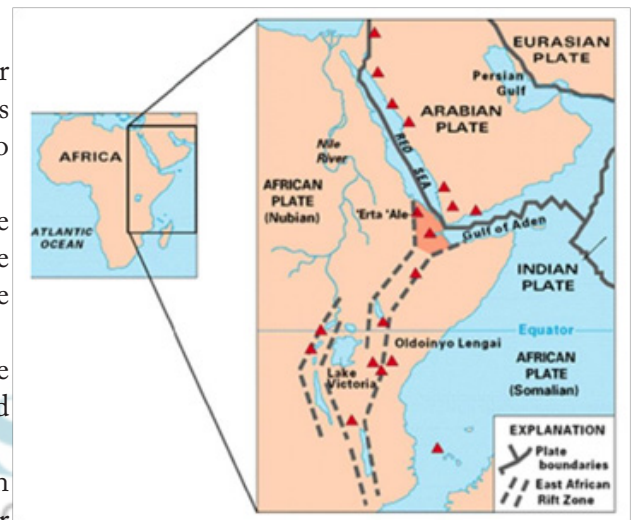
- According to the study, the division of the continent is connected to the East African Rift, a crack that stretches 56 kilometres and appeared in the desert of Ethiopia in 2005, triggering the formation of a new sea.
- This geological process will inevitably divide the continent, resulting in currently landlocked countries, such as Uganda and Zambia, obtaining their own coastlines in due time, which would take five to 10 million years.
- While the prospect of a new coastline is undoubtedly exciting, the process will not be without significant repercussions.
- The necessary evacuation of people and the potential loss of lives will be an unfortunate cost of this natural phenomenon. However, on the upside, the emergence of new coastlines will unlock a myriad of opportunities for economic growth.
- As the Somali and Nubian tectonic plates continue to pull apart from each other, a smaller continent will be

created from the rift, which will include present-day Somalia and parts of Kenya, Ethiopia, and Tanzania.

- The Gulf of Aden and the Red Sea will eventually flood into the Afar region in Ethiopia and the East African Rift Valley, leading to the formation of a new ocean.
- This new ocean will result in East Africa becoming a separate small continent with its own unique geographic and ecological characteristics.
- The three plates — the Nubian African Plate, Somalian African Plate and Arabian Plate — are separating at different speeds.
- The Arabian Plate is moving away from Africa at a rate of about an inch per year, while the two African plates are separating even slower, between half an inch to 0.2 inches per year.
- While the process of rifting may often go unnoticed, the separation of the Nubian and Somali plates can result in the formation of new faults, fissures and cracks or the reactivation of pre-existing faults, leading to seismic activity.
- Additionally, the close proximity of the hot molten asthenosphere to the surface causes volcanism, further displaying the ongoing process of continental breakup.

What is rifting?

- The Earth's lithosphere, comprised of the crust and upper part of the mantle, is divided into several tectonic plates that are not stationary but rather move in relation to each other at varying speeds.
- Tectonic forces not only move the plates but also have the potential to cause them to rupture, resulting in the formation of a rift and potentially leading to the creation of new plate boundaries.
- Rifting refers to the geological process in which a single tectonic plate is split into two or more plates separated by divergent plate boundaries.
- This process leads to the emergence of a lowland region known as a rift valley, which can occur either on land or at the bottom of the ocean. These rift valleys occur due to the movement of Earth's tectonic plates.
- The phenomenon of rifting can be traced back at least 138 million years, when South America and Africa were divided into separate continents.
- In the present day, the gradual separation of the Somali and Nubian tectonic plates is leading to the formation of a rift that could eventually lead to the creation of a new ocean basin.
- In the past 30 million years, the Arabian Plate has been gradually moving away from Africa, which has already led to the creation of the Red Sea and the Gulf of Aden.
- The seismic data obtained by the researchers revealed that similar tectonic processes triggered the rift formation at the ocean's bottom.
- The crack was located at the intersection of three tectonic plates — the African Nubian, African Somali, and Arabian — that have been separating for some time, added the report.
- Although the rifting process has been occurring for some time, the potential division made headlines worldwide in 2018 when a large crack emerged in the Kenyan Rift Valley. This highlights the ongoing process of rifting and its potential for creating a new ocean basin.



Jhamarkotra and Zawar: geoheritage sites of India

Why in News

To draw the attention of local governments, industries, and the public to potential sites, the Society of Earth Scientists (SES) and other stakeholders gathered to scout a fossil park at Jhamarkotra and the metallurgical remains at Zawar.

Important Points

Jhamarkotra

- A short, dusty climb from the Jhameshwar Mahadev pond, with no wall, fence or signboard, lies a stromatolite fossil park: it hosts stromatolites dating back 1.8 billion years, exhibiting a variety of textures and sizes.
- A stromatolite is a layered sedimentary rock created by microorganisms. As such, stromatolite fossils

preserve records of cyanobacteria, commonly known as blue-green algae – the earliest life on the planet.

- These organisms developed the ability to photosynthesise and make their own food. By doing so, they pumped large quantities of oxygen into the atmosphere of primaeval earth, allowing most other life to evolve and flourish.
- Cyanobacteria live in shallow waters; their quest for sunlight, for photosynthesis, caused them to trap sediments and deposit them as lens-like layers.
- The resulting stromatolites allowed their colonies to expand and flourish – almost like microbial reefs.
- Jhamarkotra's fossils are phosphate-rich because the trapped sediments were mainly phosphate minerals.
- These fossils are part of the reason why the region is a thriving mining hub today: the phosphate is mined for use as agricultural fertilisers. But as mining operations in the region have expanded, the industry has presented a double-edged sword: it can identify and preserve the fossils or it can damage or destroy these records of our geological past.
- For now, local bodies have cemented these specimens together, in the hopes of preserving them for scientific value and posterity.

About Zawar

- Another interesting geoheritage site lies some 40 km south of Udaipur: Zawar, the world's oldest known zinc-smelting site. It is of archaeological and metallurgic importance.
- The landscape around Zawar bears numerous traces of zinc mining and smelting operations in ancient times, including open stopes, trenches, chambers, galleries, shafts, and open-pit mines.
- The discovery here of earthen retorts – brinjal-shaped, long-necked vessels – is particularly significant: their presence here suggests Zawar had a unique zinc-smelting legacy.
- Before the advent of high pressure technology, extracting zinc was a considerable challenge.
- Zinc has low boiling and melting points, so heating it forms a vapour, which readily oxidises in contact with the atmosphere.
- However, the people of Zawar extracted zinc using a distillation process that required the use of a retort and an external condenser.
- This is why, of all metal extraction techniques, the one employed to obtain zinc represents the height of metallurgical prowess.
- Zawar's zinc-smelting operations date back 2,000 years. In 1988, the American Society of Metals acknowledged it to be the earliest zinc-smelting site in the archaeological record.
- Written records also trace the use of zinc in ancient medicine and in mediaeval weapons of war. The people in the region also traded it with their counterparts in China and Japan.

What is geoheritage?

- Geodiversity is the variety of rocks, fossils, minerals, and natural processes that shape our landscapes while geoheritage refers to sites that offer insights into the evolution of the earth and can be used for research, reference, and awareness.
- The Geological Survey of India has recognised a number of geoheritage sites around the country, but there are more that deserve the recognition yet haven't.

History

- To draw the attention of local governments, industries, and the public to potential sites, the Society of Earth Scientists (SES), a group of independent researchers bridging the gap between earth science and society, anchored a national programme for International Geodiversity Day in October 2022, followed by three field workshops to look for potential sites across India.
- The first workshop was about dinosaur fossils in Bagh, Madhya Pradesh, and the second one in the Kachchh region of Gujarat focused on Jurassic life and tectonic features, and highlighted what each state has to offer for tourism, science, and education.
- For the third workshop, earlier this March, a group of field geologists, geology professors, archaeologists, and mining industry representatives gathered to scout a fossil park at Jhamarkotra and the metallurgical remains at Zawar, around 20 km southeast of Udaipur, Rajasthan.

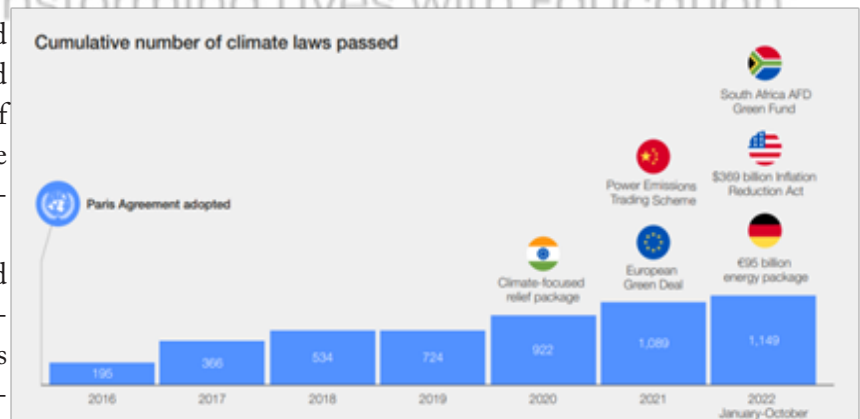
Synthesis Report by IPCC

Why in News

Intergovernmental Panel on Climate Change (IPCC) has released the final report, known as the Synthesis Report, of its sixth assessment cycle.

Important Points

- The world is on track to breach the 1.5 degree Celsius global warming limit by the 2030s, which would cause irrevocable damage to the planet's ecosystem and severely impact humans and other living being.
- IPCC added that there is still a chance to avert this mass-scale destruction, but it would require an enormous global effort to slash greenhouse gas emissions in half by 2030 and completely phase them out by 2050.
- Earth has already warmed an average of 1.1 degrees Celsius since the industrial age while humans have been responsible for virtually all global heating over the last 200 years.
- It is essentially a non-technical summary of the previous reports, which were released between 2018 and 2022, and sets out possible policies and measures that might help stave off the worst consequences of climate change.
- The new report lays out the present impact of soaring global temperature and imminent ramifications in case the planet continues to get warmer.
- Due to the current global warming levels, almost every region across the planet is already experiencing climate extremes, an uptick in deaths due to heatwaves, reduced food and water security and damage to ecosystems, causing mass extinction of species on land and in the ocean.
- The report said that vulnerable communities who have historically contributed the least to climate change are being disproportionately affected.
- It added that more than three billion people live in areas that are “highly vulnerable” to climate change — people living in these regions were 15 times more likely to die from floods, droughts and storms between 2010-2020 than those living in regions with very low vulnerability.
- Things can get worse if the world crosses the 1.5 degree Celsius temperature limit, a target agreed to in the Paris Agreement. This would result in an unpredictable global water cycle, drought and fires, devastating floods, extreme sea level events and more intense tropical cyclones.
- According to the scientists involved in writing the report, India would also face these dire consequences of global warming and needs to take immediate action to curb the temperature.
- Given the present scale, scope and pace of global action, it's most likely that Earth would overshoot this critical warming threshold somewhere in the following decade.
- The report categorically states that despite some advancements towards curtailing the greenhouse gas emissions into the atmosphere, “adaptation gaps exist, and will continue to grow at current rates of implementation.”
- Some of the barriers to adaptation have been limited resources, lack of private sector and citizen engagement, low climate literacy, lack of political commitment and low sense of urgency.
- The Synthesis Report underlines the requirement of climate-resilient development, which is finding ways to adapt to climate change or reduce greenhouse gas emissions that provide wider benefits.
- It further mentions that to be effective, these measures must be rooted in our diverse values, world views and knowledge around the globe — including Indigenous knowledge.
- Apart from highlighting the urgent need of limiting the use of fossil fuel, the report urges governments and policymakers to increase finance to climate investments, expand the clean energy infrastructure, reduce nitrogen pollution from agriculture, curtail food waste, adopt measures to make it easier for people to lead low-carbon lifestyles and much more.



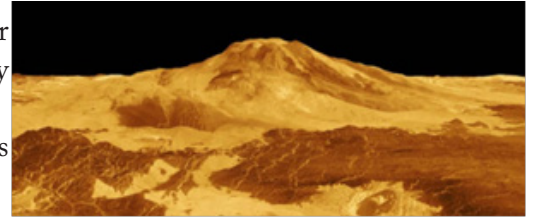
Active volcano found on Venus

Why in News

A new analysis of archival radar images taken around three decades ago has found direct geological evidence of recent volcanic activity on the surface of Venus, also known as Earth's twin, for the first time.

Important Points

- Researchers have observed a volcanic vent changing its shape and getting bigger in size in around eight months.
- The research has been carried out by Robert Herrick of the Geophysical Institute, University of Alaska Fairbanks (USA), and Scott Hensley of Jet Propulsion Laboratory (JPL), California Institute of Technology (USA).
- For years, scientists have known that numerous volcanoes cover Venus but there wasn't any evidence up till now to show if any one of them is still active.
- Scientists made the new discovery by pouring over images of Venus taken by NASA's Magellan spacecraft between 1990 and 1992.
- During their examination, they looked at the planet's Atla Regio area, where two of the biggest volcanoes of Venus, Oza Mons and Maat Mons, are located.
- They noticed a vent situated on the north side of a domed shield volcano that is part of the larger Maat Mons volcano that changed significantly in shape and size between February and October 1991.
- The study said in the February radar image, this vent appeared nearly circular and deep with steep walls, covering 2.6 sq km of area.
- However, in the images that were taken eight months later, the same vent had become irregular in outline, shallower and nearly filled while covering about 3.9 sq km. This indicated an eruption or flow of magma beneath the vent.
- As volcanoes act like windows to provide information about a planet's interior, the new findings take scientists a step further to understand the geological conditions of not just Venus but also other exoplanets.
- Apart from this, the findings give us a glimpse of what more is to come regarding Venus as in the next decade, three new Venus missions would be launched, including the European EnVision orbiter and NASA's DAVINCI and VERITAS missions.



Possibility of aliens hiding in special 'terminator zones'

Why in News

A recent study was conducted by astronomers from the University of California, suggested the possibility of aliens hiding in special 'terminator zones' on distant exoplanets, where the temperature is not too hot or cold.

Important Points

About terminator zones & planets

- The astronomers, in their study, found that there is a band around these planets in which there is a possibility that they are harbouring liquid water which is the main ingredient for life.
- This band is called the 'terminator zone' where the terminator acts as the dividing line between the day side and night side of the exoplanet.
- The terminator zones are the regions that could exist in that sweet spot between too hot and too cold.
- Such planets are quite common because they exist around stars that make up about 70 percent of the stars seen in the night sky – so-called M-dwarf stars, which are relatively dimmer than our sun.
- The dark sides of terminator planets, would mean a perpetual night and freezing temperatures, whereas the side facing the star could be too hot for water to remain liquid.
- Only recently have astronomers been able to show that such planets can sustain habitable climates confined to this terminator region because researchers have mostly studied ocean-covered exoplanets in their search for candidates for habitability.
- How large and wide such zones are remains to be known.
- Recognising terminator zones as potential harbours for life also means that astronomers will need to adjust the way they study exoplanet climates for signs of life, because the bio-signatures life creates may only be present in specific parts of the planet's atmosphere.

INDIAN ECONOMY

International IP Index

Why in News

The US Chambers of Commerce Global Innovation Policy Center has released the International IP Index recently.

Important Points

- By analysing the IP landscape in global markets, the Index aims to help nations navigate toward a brighter economic future marked by greater innovation, creativity, and competitiveness.
- Following a decade of steady, incremental, improvement in IP systems worldwide, a deluge of proposals under consideration by US and international policy leaders, including at multilateral organisations, threatens to compromise hard-won economic gains.
- It covers everything from patent and copyright laws to the ability to monetize IP assets and the ratification of international agreements.
- It evaluates the protection of IP rights in 55 of the world's leading economies, together representing around 90% of global GDP.
- By analysing the IP landscape in global markets, the index claims that its aims are to help nations navigate toward a brighter economic future marked by greater innovation, creativity and competitiveness.
- Economies of all levels of development—including the EU, UK, India, Singapore, Russia, and India—have utilized injunctive-style relief to disable access to infringing content.
- According to the index, Asia had the greatest improvement in the regional average score as a result of score improvements in Malaysia and Singapore, in addition to Thailand and Vietnam.
- Morocco and Thailand at 2.5% each and Vietnam at 2.02% had the largest improvements in their overall score.

India's ranking

- According to the Index India is ripe to become a leader for emerging markets seeking to transform their economy through IP-driven innovation.
- India has been ranked 42nd out of 55 countries in the index.
- It said that India not only has generous R&D and IP-based tax incentives, but also has a strong awareness-raising efforts regarding the negative impact of piracy and counterfeiting.
- It is a global leader on targeted administrative incentives for the creation and use of IP assets for SMEs.
- However, the report said the 2021 dissolution of the Intellectual Property Appellate Board, combined with the long standing issue of an under-resourced and overstretched judiciary, raises serious concerns about rights holders' ability to enforce their IP rights in India and to resolve IP-related disputes.



SWAYATT

Why in News

A function was held to commemorate the success of “SWAYATT”, an initiative to promote Start-ups, Women and Youth Advantage Through eTransactions on Government eMarketplace (GeM) in New Delhi.

Important Points

- It was launched in February 2019 under Ministry of Commerce and Industry.
- It seeks to promote inclusiveness of various categories of sellers and service providers on the portal, by taking proactive steps to facilitate their training and registrations of such specific category of manufacturers and sellers, develop women entrepreneurship and encourage participation of MSME sector and Start-ups in public procurement.

What is Government eMarketplace (GeM)?

- The Government e Marketplace is an online platform for public procurement in India.
- GeM is a section 8 company setup under the administrative control of the Department of Commerce, Ministry of Commerce and Industry, for procurement of goods and services by Central Ministries, State Departments, PSEs and Autonomous Bodies.
- The initiative was launched on August 9, 2016 with the objective to create an open and transparent procurement platform for government buyers.
- Social inclusion is a core value at GeM and is focused on increasing participation from under-served sellers who face challenges in public procurement.



Hallmark Unique Identification (HUID) number

Why in News

The Union Ministry of Consumer Affairs, Food and Public Distribution has said that from April 1, the sale of gold jewellery will not be allowed without a HUID number.

Important Points

What is a HUID number?

- HUID number is a six-digit alphanumeric code. It is given to every piece of jewellery at the time of hallmarking, and is a unique identifier for each gold item.
- The jewellery is stamped with the unique number manually at the Assaying & Hallmarking centre.
- Earlier, the HUID used to be of four digits. As of now both HUIDs (4- and 6-digit) are used in the market.
- The HUID makes it easy to trace the individual piece of jewellery, and is a guarantee of quality.
- In HUID-based Hallmarking, registration of jewellers is automatic with no human interference. It is aimed at ensuring the purity of Hallmarked jewellery and check any malpractice.
- HUID is a secure system and poses no risk to data privacy or security. HUID-based Hallmarking is a win-win for everyone.

What is hallmarking?

- Hallmark is a mark on gold jewellery which is affixed by an entity recognised by Bureau of Indian Standards (BIS) to assure its fineness and purity.
- A BIS Hallmark consists of three symbols — the BIS logo, a symbol to indicate the purity and fineness of the jewellery, and then the HUID.
- No gold jewelry is made of 100 per cent gold, as the yellow metal in itself is very soft and has to be mixed with other metals to shape it into jewelry items.
- The “purer” the jewellery, i.e., the more gold a piece of jewellery has, the more expensive it will be.
- The three categories of hallmarked jewellery are:
 - 22K916 means that it is a 22 carat gold and the piece of jewellery has 91.6 percent gold.
 - 18K750 means that it is an 18 carat gold and the piece of jewellery has 75 percent gold.

- 14K585 means that it is a 14 carat gold and the piece of jewellery has 58.5 percent gold.
- One may check the purity of gold jewellery at any BIS-recognized Assaying and Hallmarking Centre. For this one will have to pay a fee of Rs 200.
- However, a consumer cannot apply to the Assaying and Hallmarking Centre for getting a hallmark on her gold jewellery. This has to be done through a BIS-registered jeweler.

Har Payment Digital mission of RBI

Why in News

Reserve Bank of India (RBI) launched the Mission 'Har Payment Digital' on the occasion of Digital Payments Awareness Week(DPAW) from 6th to 12th of March 2023.

Important Points

- It is part of RBI's endeavour to make every person in India a user of digital payments.
- The DPAW campaign theme is "Digital Payment Apnao, Auro ko bhi Sikhao" (Adopt digital payments and Also teach others).
- It is aimed at reinforcing the ease and convenience of digital payments and facilitating onboarding of new consumers into the digital fold.
- The Reserve Bank will also initiate a '75 Digital Villages' programme in observance of 75 years of Independence.
- Under this programme, Payment System Operators will adopt 75 villages across the country and convert them into digital payment enabled villages.
- RBI appealed to all the stakeholders - banks, non-banks, payment system operators, digital payment users, etc. - to adopt digital payments and teach others about the merits of using digital payments. This would encourage every person to become a digital payment user.

SEBI issues framework for the adoption of cloud services

Why in News

SEBI has issued framework for the adoption of cloud services recently.

Important Points

The framework:

- It asks stock exchanges, clearing corporations and other regulated entities (REs) including depositories, stock brokers through exchanges, asset management companies (AMCs) and KYC registration agencies (KRAs) to adopt cloud services.
- The cloud framework has been drafted to provide baseline standards of security and for the legal and regulatory compliances by the

Applicability of cloud framework

Stock Exchanges
Clearing Corporations
Depositories
Stock Brokers through Exchanges
Depository Participants through Depositories
Asset Management Companies (AMCs)/ Mutual Funds (MFs)
Qualified Registrars to an Issue and Share Transfer Agents
KYC Registration Agencies (KRAs)

- Regulated Entities (REs). It will be in addition to the existing circulars, guidelines and advisories of Sebi.
- The major purpose of this framework is to highlight the key risks, and mandatory control measures which REs need to put in place before adopting cloud computing.
- The document also sets out the regulatory and legal compliances by REs if they adopt such solutions.
- The framework will come into force immediately for all new or proposed cloud onboarding assignments or projects of the REs.
- Cloud computing is the on-demand delivery of IT resources through the internet with pay-to-use charges.

- Instead of buying and maintaining computer products and services, one can pay to use a cloud computing service saving the time, effort and cost of doing it.
- For REs that are currently availing cloud services should ensure that wherever applicable, all such arrangements are revised and they should be in compliance with the framework within 12 months.
- Sebi noted that while cloud computing offers multiple advantages viz ready to scale, ease of deployment, no overhead of maintaining physical infrastructure etc., the RE should also be aware of the new cyber security risks and challenges which cloud computing introduces.
- According to the regulator, the cloud framework is a principle-based framework that covers Governance, Risk and Compliance (GRC), selection of Cloud Service Providers (CSPs), data ownership and data localisation, due- diligence by REs, security controls, legal and regulatory obligations, among others.

Finance Ministry brings Crypto assets under Prevention of Money Laundering Act

Why in News

In order to widen the taxation and regulatory net and give teeth to agencies, the government issued a notification bringing transactions involving crypto assets under the Prevention of Money Laundering Act(PMLA).

Important Points

- The finance ministry notified changes to rules related to maintenance of records under the Prevention of Money Laundering Act.
- As per the changes, the ownership threshold has been reduced to 10% from 25% earlier.
- This means that any individual or group having 10% ownership in the client of a 'reporting entity' will now be considered a beneficial owner.
- Under the anti-money laundering law, 'reporting entities' are banks and financial institutions, firms engaged in real estate and jewellery sectors. They also include intermediaries in casinos and crypto or virtual digital assets.
- As per the latest change, entities dealing in virtual digital assets will now be considered 'reporting entity' under the PMLA.
- It laid out the nature of transactions to be covered under PMLA. These are as follows:
 - o Exchange between virtual digital assets and fiat currencies;
 - o Exchange between one or more forms of virtual digital assets;
 - o Transfer of virtual digital assets;
 - o Safekeeping or administration of virtual digital assets or instruments enabling control over virtual digital assets;
 - o Participation in and provision of financial services related to an issuer's offer and sale of a virtual digital asset.
- The measure is expected to aid investigative agencies in carrying out action against crypto firms.
- The Enforcement Directorate and Income Tax Department have either probed or are probing several cases against companies running cryptocurrency exchanges and transactions.
- ED, for instance, froze the bank balances of the popular WazirX exchange in 2022.

What is virtual digital asset?

- According to the Income tax act, 'virtual digital asset' refers to any information, code, number, or token (not being Indian currency or foreign currency), generated through cryptographic means or otherwise and can be called by whatever name.

Legal status of crypto in India

- In the Union Budget of 2022, even though the government brought in a tax for cryptocurrencies, it did not proceed with framing regulations.
- Earlier, the Reserve Bank of India had proposed a ban that was set aside by a court order.
- In July 2022, flagging the RBI's concerns, Finance Minister Nirmala Sitharaman told Parliament that "international collaboration" would be needed for any effective regulation or ban on cryptocurrency.
- From April 2022, India introduced a 30 per cent income tax on gains made from cryptocurrencies.
- In July 2022, rules regarding 1 per cent tax deducted at source on cryptocurrency came into effect.

CENTRE CAN SHUT DOWN ERRANT ENTITIES	
Govt's moves <ul style="list-style-type: none"> > In last year's Budget, FM introduced 30% tax on income from VDAs, 1% TDS on transactions > FM had clarified that taxing cryptos does not make them legal > Centre has now said exchanges will need to perform KYC of clients > Govt can penalise or shut down entities that do not comply 	RBI's position <ul style="list-style-type: none"> > RBI has likened crypto to Ponzi schemes and said recognising them could lead to 'dollarisation' of the economy, which would be against India's interests > It has been highlighting risks cryptos pose to financial stability > To counter the challenge, RBI launched own digital currency

Mundra Petrochemical project

Why in News

The Adani group has suspended work on a Rs 34,900 crore petrochemical project at Mundra in Gujarat recently.

Important Points

Mundra Petrochemical project

- Adani group's flagship Adani Enterprises Ltd (AEL) had in 2021 incorporated a wholly owned subsidiary, Mundra Petrochem Ltd, for setting up a greenfield coal-to-PVC plant at Adani Ports and Special Economic Zone (APSEZ) land in Kutch district of Gujarat.
- The plant was to have a poly-vinyl-chloride (PVC) production capacity of 2,000 KTPA (kilo tonne per annum) requiring 3.1 million tonne per annum (MTPA) of coal that was to be imported from Australia, Russia and other countries.
- The suspension of the Mundra project comes in the aftermath of the damaging Hindenburg report, which alleged accounting fraud, stock manipulations and other corporate governance lapses.

What is poly-vinyl-chloride (PVC)?

- PVC is the world's third-most widely produced synthetic polymer of plastic, after polyethylene and polypropylene.
- It finds wide applications – from flooring, to making sewage pipes and other pipe applications, in insulation on electrical wires, and manufacture of aprons etc.
- PVC comes in two basic forms: rigid and flexible. The rigid form of PVC is used in construction for pipe and in profile applications such as doors and windows.
- It is also used in making plastic bottles, non-food packaging, food-covering sheets and plastic cards (such as bank or membership cards).
- India produced roughly 1.45 million tonnes of PVC in 2022 and imported another 1.5 million tonnes as per data from the Alkali Manufacturers Association of India.
- The Mundra Petrochemicals project was planned to bridge the gap between domestic production and demand for PVC in India, turning India into a net exporter of PVC instead.

AT1 bonds

Why in News

The wipeout of \$17 billion worth of AT1 bonds in the UBS-Credit Suisse deal has left investors struggling to understand the deal.

Important Points

- The Swiss government-brokered takeover of Credit Suisse Bank by UBS Bank has kept global markets on their toes. Governments and regulators are making frantic efforts to avoid contagion.
- Banks are issuing statements to reassure their customers about their financial health. And investors are rushing to find safer instruments to invest in.
- The investors' fear was accentuated after the UBS-Credit Suisse deal wiped out \$17 billion worth of additional tier one (AT1) bonds of Credit Suisse.
- The owners of these have been left in the cold as they would now not receive even a single penny in the payout.

What are AT1 bonds?

- AT1 bonds are a type of unsecured, perpetual bonds that banks issue to improve their core capital base.
- The money raised through these bonds is kept aside as a shock absorber by the bank.
- When in trouble, banks can convert AT1 bonds to equity or be written down.
- These bonds were created in the wake of the 2008 financial crisis to absorb the losses. Using money raised through these bonds reduces the chances of a taxpayer payout.
- AT1 bonds are also called contingent convertible bonds or CoCos.
- These bonds are also mandatory under Basel=III norms.
- The banks must maintain capital at a minimum ratio of 11.5 per cent of their risk-weighted loans.
- Of this, 9.5 per cent needs to be in Tier-1 capital. AT1 bonds fall under this type of capital.
- These bonds are long-term and do not carry any maturity date.
- Because of a higher risk, they offer a higher yield.

AT1 bonds: What happened in the case of Credit Suisse?

- Generally, when a bank fails, the bondholders rank higher in the pecking order than the shareholders. But in the case of Credit Suisse, the shareholders will receive some compensation while the bondholders will not.

Why are shareholders being preferred over bondholders?

- The main reason shareholders will get compensation and bondholders will not is that Credit Suisse did not follow a "traditional bankruptcy".
- It did not go through the bankruptcy process and was taken over by other banks. So, the rules of a typical bankruptcy do not apply here.
- The banking regulators in the European Union (EU) and the Bank of England earlier this week reassured AT1 investors and said that in case of future bank crises, they would be given priority over shareholders.
- Common equity instruments (stocks) are the first ones to absorb losses, and only after their full use would additional tier one be required to be written down.
- This approach has been consistently applied in past cases.

Has this happened in any Indian bank as well?

- In 2020, India's private lender YES Bank wrote off AT1 bonds worth Rs 8,415 crore as a part of its bailout. The investors took the matter to the courts, and in January this year, the Bombay High Court quashed the bank's decision to write off the bonds.

IMF**Why in News****IMF Approves \$3 Billion Bailout for Sri Lanka****Important Points**

- The International Monetary Fund (IMF) approved a nearly \$3 billion financial assistance plan for Sri Lanka.
- The IMF also said it will carefully study Sri Lanka's governing practices including possible corruption as part of the program.
- About \$333 million will be immediately provided to help solve the country's humanitarian crisis.
- The approval will also open up financial support from other international institutions.
- The South Asian country suspended repayment of its debt last year when it lacked foreign currency needed to pay for imports of fuel and other important goods.
- The shortages led to street protests that forced out the country's president.
- The economic situation has improved under current President Ranil Wickremesinghe. But his plans to privatize state companies have brought opposition.
- Since last year, Sri Lankans have protested in the street demanding punishment and recovery of money allegedly stolen by members of a former ruling family.
- Critics of the government say corruption has been the main factor behind the country's economic crisis.
- The approval will unlock financing of up to \$7 billion from other international financial institutions.
- If Sri Lanka's foreign currency improves, the country will slowly lift import restrictions.
- The IMF required Sri Lanka to raise income taxes and remove government support for electricity and fuel. But Breuer said the impact of the reforms on the poor needs to be limited.
- Sri Lanka's foreign currency ran short as tourism and export earnings fell during the COVID-19 pandemic.
- Sri Lanka also faced heavy debt payments to Chinese and other lenders for large projects that did not create enough earnings.
- Sri Lanka also used its foreign currency holdings to try to strengthen Sri Lankan money, the rupee.

IMF

- The International Monetary Fund (IMF) works to achieve sustainable growth and prosperity for all of its 190 member countries.
- It does so by supporting economic policies that promote financial stability and monetary cooperation, which are essential to increase productivity, job creation, and economic well-being.
- The IMF is governed by and accountable to its member countries.

What does the IMF do?

- The IMF has three critical missions: furthering international monetary cooperation, encouraging the expansion of trade and economic growth, and discouraging policies that would harm prosperity.
- To fulfill these missions, IMF member countries work collaboratively with each other and with other international bodies.

Impact of Fed rate on the Economy

Why in News

The Federal Reserve System, the central banking system of the United States has raised the interest rate by 25 basis points recently.

Important Points

Fed rate

- In the United States, the federal funds rate is the interest rate at which depository institutions (banks and credit unions) lend reserve balances to other depository institutions overnight on an uncollateralized basis.
- Reserve balances are amounts held at the Federal Reserve to maintain depository institutions' reserve requirements.
- Institutions with surplus balances in their accounts lend those balances to institutions in need of larger balances.
- The federal funds rate is an important benchmark in financial markets.
- The federal funds target range is determined by a meeting of the members of the Federal Open Market Committee (FOMC) which normally occurs eight times a year about seven weeks apart.
- The Federal Reserve uses open market operations to bring the effective rate into the target range.
- The target range is chosen in part to influence the money supply in the U.S. economy.

Economical Impact

- The actions of the Fed will likely drive the decisions of central banks around the world, as they seek to strike a delicate balance among growth, inflation, and currency volatility.
- When interest rates rise in the US and other developed markets, foreign investors, especially from the US, go for investments in US debt and other avenues, which impacts the flow of funds into Indian equity markets.
- Since the beginning of January 2023, foreign portfolio investors (FPIs) have pulled out a net of more than Rs 27,000 crore from Indian equities.
- As for debt investors, as interest rates are expected to rise further before stabilising and moving on a downward trajectory, investment advisors say they should look to invest in medium- to long-term debt investment products as interest rates peak in the coming months.
- When the Fed is tightening, interest rates tend to rise more for emerging markets, including India, which see a sharp currency depreciation.
- While it is not necessary that the RBI will blindly follow the Fed and other central banks in hiking rates, interest rates in India have, in fact, moved in tandem with rates in the US.
- While most central banks, including the RBI, have been raising rates to tame inflation, the RBI considers domestic factors, especially retail inflation, while reviewing interest rates.
- As price pressures wane, several central banks have opted for slower rate hikes or pauses.

The Federal Reserve System

- The Federal Reserve System (often shortened to the Federal Reserve, or simply the Fed) is the central banking system of the United States.
- It was created on December 23, 1913, with the enactment of the Federal Reserve Act, after a series of financial panics (particularly the panic of 1907) led to the desire for central control of the monetary system in order to alleviate financial crises.
- Over the years, events such as the Great Depression in the 1930s and the Great Recession during the 2000s have led to the expansion of the roles and responsibilities of the Federal Reserve System.
- Congress established three key objectives for monetary policy in the Federal Reserve Act: maximizing employment, stabilizing prices, and moderating long-term interest rates.



GST Appellate Tribunal (GSTAT)

Why in News

The Lok Sabha has recently passed Finance Bill, 2023 with 64 amendments, including one that seeks to set up the much-awaited GST Appellate Tribunal (GSTAT).

Important Points

GSTAT

- It will deal with tax disputes, and also lessen the burden on the higher judiciary, which has repeatedly sought the institution of such a body.
- The constitution of GSTAT has been pending since the new indirect tax regime was launched in July 1, 2017.
- The amended Finance Bill, 2023 proposed substitution of section 109 of the Central GST Act in order to facilitate creation of the GSTAT and its benches.
- As per the bill, the Government shall, on the recommendations of the Council, by notification, establish with effect from such date as may be specified therein, an Appellate Tribunal known as the Goods and Services Tax Appellate Tribunal for hearing appeals against the orders passed by the Appellate Authority or the Revisional Authority.
- According to the legislation, GSTAT will have a “Principal Bench” in New Delhi, with the President, a judicial member, a technical member (centre) and a technical member (state). It will also have state benches .
- The Principal Bench and each state Bench would have two judicial members and two technical members each, with equal representation from the Centre and states in the case of technical members.
- According to the proposed changes, the cases involving the issue of the place of supply would be heard by the Principal Bench only.
- A single member of a Bench would hear appeals below Rs 5 million related to tax or input tax credit or fee or penalty determined in an order of any appellate authority or revisional authority if no question of law is involved.
- In all other cases, matters would be heard together by one Judicial member and one technical member.
- The tribunal will help quickly resolve disputes relating to the key indirect tax and boost tax collections, addressing concerns of both industry and tax authorities.
- A four-member search and selection committee, headed by either the Chief Justice of the Supreme Court or his representative judge from the SC, will be tasked with the appointment of members (except for technical members from states) to the Benches.
- The panel will include the President of the GSTAT (one of the judicial members of the Principal Bench), a union government secretary and a state chief secretary nominated by the Council. The chairperson will have a casting vote.



Chapter- 5

SCIENCE AND TECHNOLOGY

Kerala Becomes First State to Clean Manholes with Robot Scavengers

Why in News

The Kerala government has recently launched robotic scavenger, Bandicoot, to clean sewages in this temple town, becoming the first state in the country to use robotic technology to clean all its commissioned manholes



Important Points

- The robot has been named after Bandicoot, a terrestrial, largely nocturnal marsupial omnivore. They are endemic to the Australia–New Guinea region, including the Bismarck Archipelago to the east and Seram and Halmahera to the west. With their well-attuned snouts and sharp claws, bandicoot are fossorial diggers.

About Bandicoot

- Bandicoot was launched under the Guruvayur Sewerage Project in Thrissur district by the Kerala Water Authority (KWA), as part of the 100-day action plan of the state government.
- The robotic Tron Unit, which is the major component of Bandicoot, enters the manhole and removes sewage using robotic hands, similar to a man's limbs.
- The machine has waterproof, HD vision cameras and sensors that can detect harmful gases inside the manholes.
- Bandicoot, developed by Kerala-based Genrobotics, had recently bagged 'Kerala Pride' award at the Huddle Global 2022 conclave organised by Kerala Startup Mission (KSUM).
- Bandicoot robots are currently deployed in few towns across 17 states in India and three Union Territories.
- In 2018, KWA started using Bandicoot to clean the manholes in Thiruvananthapuram. Later, it was introduced in Ernakulam also.
- Genrobotics, a Technopark-based company, have developed "the world's first robotic scavenger" Bandicoot in an effort to eliminate manual scavenging providing respite for workers engaged in manhole cleaning.

Organ on a Chip

Why in News

The U.S. Food and Drug Administration Modernization Act 2.0 has recently approved computer-based and experimental alternatives to animals to test new drugs.

Important Points

- An organ-on-a-chip is a multi-channel 3-D microfluidic cell culture, integrated circuit that simulates the activities, mechanics and physiological response of an entire organ or an organ system.
- It is a small device containing human cells that are used to mimic the environment in human organs, including blood flow and breathing movements, serving as synthetic environments in which to test new drugs.
- This technology allows researchers to replicate the function of tissues and organs, bridging the gap between animals and human systems.

- In drug development, it's seen as an exciting in vitro alternative to assess not only the safety but efficacy of drugs.
- In India, a few research groups have been developing organ-on-chip models over the last few years.
- Scientists at the Institute of Chemical Technology, Mumbai have developed a skin-on-chip model. The model is currently being tested for studying skin irritation and toxicity.
- They are also developing a retina-on-chip model together. They are also separately developing a placenta-on-chip model.



Mad cow disease

Why in News

Brazil halted beef export to China after a case of mad cow disease was confirmed in the northern state of Para.

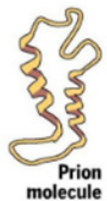
Important Points

What is Mad Cow Disease?

- Mad Cow Disease, also known as Bovine Spongiform Encephalopathy (BSE), is a deadly and slowly progressive infection affecting adult cattle's central nervous system. It is degenerative and can be transmitted to humans who consume contaminated meat products.
- It can be contracted by a cow if it eats feed that has been contaminated with parts of another cow that was infected with BSE.
- BSE is a result of an abnormal protein called a prion, which typically exists on the surface of cells.
- This prion transforms into a harmful form that harms the nervous system, including the brain and spinal cord.
- The presence of this altered protein is undetected by the affected cow's body, making it impossible for the cow to fight off the disease.
- The disease leads to neurological symptoms. One of the most common symptoms of BSE in cows is incoordination, which means the cow has difficulty walking and standing up.
- The cow may also show signs of nervousness or aggression. These symptoms typically appear when the cow is in the final stages of the disease.
- The incubation period of BSE, which is the time from when a cow is infected with the prion to when it shows symptoms, can range from four to six years. During this period, there are no visible signs of the disease.
- Once a cow starts showing symptoms of BSE, it progressively gets worse until it dies. The duration of the disease can range from two weeks to six months.
- There is no cure for BSE, and infected cows are typically euthanized to prevent the spread of the disease to other cows and humans.
- It has no known treatment and there is no vaccine available to prevent it.

What is mad cow disease?

Mad cow disease, or bovine spongiform encephalopathy, is a neurological disorder in cattle. It is caused by an abnormal protein called a prion that infects a cow's central nervous system and causes brain and nerve cells to die. Prions are passed to humans through consumption, and that can trigger the human form of the disease.



How it spreads from cows to humans

- 1** Person eats contaminated food. Prions are found primarily in brain or spinal cord tissue from infected animal.
- 2** After a person ingests infected meat, prions spread to the brain through the body's lymph nodes and immune system, where they can remain dormant for years.
- 3** Disease attacks nervous system. Outer layer of brain develops tiny holes, looks spongy. Host goes into seizures; death may occur.



Prevention

Eradication: Infected farm animals are destroyed.

Regulations: Animal products containing brain or central nervous system tissue aren't used as livestock feed.

Consumers: Avoid beef that contains parts of the cow's main nervous system. Prions are heat resistant, so cooking the meat will not reduce the risk.

AIIMS Facial Toolbox for Emotions Recognition

Why in News

Doctors of AIIMS Hospital have come up with a tool named AFTER that will detect human emotions.

Important Points

About AIIMS Facial Toolbox for Emotions Recognition (AFTER)

- Doctors believe that with the help of this tool, it will be easier to treat patients with autism, schizophrenia and depression.
- People have to look at the human expression range of this device and tell what they are feeling. After which the answers of the people will be measured with the rating system installed inside this device.
- The clinical utility of this tool is that Emotion Recognition Capability can be detected from people with neuropsychiatric conditions.
- This tool is beneficial for the patients as well as the doctors. Being computerised, with the help of this tool, doctors will know about the Emotion Recognition task in the brain.

About AIIMS

- All India Institute of Medical Sciences, New Delhi, also known as AIIMS Delhi, is a public medical research university and hospital in New Delhi, India.
- The institute is governed by the AIIMS Act, 1956 and operates autonomously under the Ministry of Health and Family Welfare.
- The idea of AIIMS arose in 1946, after a recommendation by the Health Survey of the Government of India.



H3 N2 Influenza

Why in News

The Indian Council of Medical Research (ICMR) has said that rising cases of intense cough lasting for over a week coupled with fever, observed in most parts of the country, can be linked to Influenza A H3N2.

Important Point

What is H3N2?

- Also known as the “Hong Kong flu,” H3N2 is a type of influenza virus that can cause respiratory illness in humans.
- It is a subtype of the Influenza A virus and has been responsible for several influenza outbreaks in the past.
- Influenza A H3N2 variant viruses (also known as “H3N2v” viruses) with the matrix (M) gene from the 2009 H1N1 pandemic virus were first detected in people in July 2011.
- The viruses were first identified in U.S. pigs in 2010.
- During 2011, 12 human infections with H3N2v were detected.
- Infections with H3N2v have mostly been associated with prolonged exposure to pigs at agricultural fairs.
- Limited human-to-human spread of this virus has been detected in the past as well but no sustained or community spread of H3N2v has been identified at this time.
- It’s possible that sporadic infections and even localized outbreaks among people with this virus will continue to occur.
- H3N2 influenza is highly contagious and can spread from person to person through droplets generated when an infected person talks, coughs, or sneezes.

10% NEEDED O₂

- H3N2 subtype causes more hospitalisations than other influenza subtypes
- In hospitalised patients, 92% patients have fever, 86% cough, 27% breathlessness, 16% wheezing. Recent ICMR survey found that 16% had pneumonia, 6% had seizures
- 10% of patients suffering severe acute respiratory infections needed oxygen, and 7% required ICU care

- It can also spread by touching a surface contaminated with the virus and then touching one's mouth or nose.
- H3N2 symptoms are, Fever, chills, cough, nausea, vomiting, sore throat, muscle and body aches, diarrhoea, runny nose and sneezing.
- Treatment for H3N2 influenza includes rest, drinking plenty of fluids, and taking over-the-counter medications such as acetaminophen or ibuprofen to reduce fever and relieve pain.
- Antiviral medications like oseltamivir and zanamivir may also be prescribed by a doctor for people with severe symptoms or those who are at high risk of complications.

Lewis super-acid

Why in News

Researchers at the Paderborn University, Germany have reported being able to make a unique class of catalysts used in chemistry to accelerate reactions called Lewis super-acids

Important Points

- Named for the chemist, G N Lewis, Lewis super-acids derive from Lewis acids.
- A Lewis acid is any substance, such as a Hydrogen ion (H⁺) that can accept a pair of nonbonding electrons.
- In other words, a Lewis acid is an electron-pair acceptor.
- A Lewis base is any substance, such as the OH⁻ ion, that can donate a pair of nonbonding electrons. A Lewis base is therefore an electron-pair donor.
- Because Lewis acids add electron pairs, they are often used to speed up chemical reactions.
- Lewis superacids are stronger than antimony pentafluoride, the strongest Lewis acid and can break even the toughest bonds.
- Breaking strong, chemical bonds requires highly reactive substances.
- Because they are so reactive, they are hard to manufacture however the research team, in a paper, said they used a “trick” to produce these super acids.
- Being able to make these super acids, enables non-biodegradable fluorinated hydrocarbons, similar to Teflon, and possibly even climate-damaging greenhouse gases, such as sulphur hexafluoride, to be converted back into sustainable chemicals.

Establishing time zone for the moon

Why in News

The European Space Agency(ESA) said that current system of time zone for moon is unsustainable. A universal timekeeping system for the moon is needed.

Important Points

- The ESA said that the main objective of establishing a universal timekeeping system for the moon is to streamline contact among the various countries and entities, public and private, that are coordinating trips to and around the moon.
- It has said that a universal timekeeping system for the moon is needed, but that many details remain to be worked out.
- One of the questions that has yet to be settled was whether lunar time should be set on the moon or synchronized with Earth.
- Time on Earth is precisely tracked by atomic clocks, but synchronizing time on the moon is tricky because clocks run faster there, gaining around 56 microseconds, or millionths of a second, per day.
- Once a new lunar time zone is established, the methods used to create it will be useful for future space exploration.
- Astronauts could go to Mars in the next two to three decades, he said, and will face similar logistical hurdles that a Martian time zone could address.

Coordinated Universal Time or UTC

- UTC is the primary time standard by which the world regulates clocks and time. It is within about one second of mean solar time at 0° longitude and is not adjusted for daylight saving time. It is effectively a successor to Greenwich Mean Time.

- The coordination of time and frequency transmissions around the world began on 1 January 1960.
- UTC was first officially adopted as CCIR Recommendation 374, Standard-Frequency and Time-Signal Emissions, in 1963, but the official abbreviation of UTC and the official English name of Coordinated Universal Time (along with the French equivalent) were not adopted until 1967.
- The system has been adjusted several times, including a brief period during which the time-coordination radio signals broadcast both UTC and “Stepped Atomic Time (SAT)” before a new UTC was adopted in 1970 and implemented in 1972.

NISAR observation satellite

Why in News

Recently, NASA has handed over the Earth observation satellite ‘NISAR’ to Indian Space Research Organisation (ISRO) at its Bengaluru headquarters.

Important Points

NISAR

- The word ‘NISAR’ finds its origin in NASA-ISRO-SAR.
- It is an SUV-sized satellite that is dedicatedly developed by the space agencies of the U.S and India for studying hazards and global environmental change.
- India and the US had agreed upon this mission during then-President Barack Obama’s visit to India in 2015.
- The major scientific objectives of the NISAR mission are to improve understanding of the impact of climate change on Earth’s dynamic ecosystem, land, and coastal processes, land deformations, and cryosphere.
- It will observe Earth’s land with 12-day regularity on ascending and descending passes, sampling Earth on average every 6 days for a baseline 3-year mission.
- The mission that is equipped with the largest reflector antenna ever launched by NASA, will measure Earth’s changing ecosystems and dynamic surfaces, spotting warning signs of imminent volcanic eruptions on one hand, and ice masses on the other, providing information about biomass, natural hazards, sea-level rise, earthquakes, landslides, tsunamis and aid in monitoring groundwater supplies.
- NISAR’s global and rapid coverage will provide unprecedented opportunities for disaster response, providing data to assist in mitigating and assessing damage, with observations before and after disasters in short time frames.
- As far as utility is concerned, ISRO has identified few areas where NISAR’s findings would prove to be beneficial. These are – Agricultural monitoring and characterization, landslide studies, Himalayan glacier studies, soil moisture, coastal processes, coastal winds, among others that are crucial for India.
- NISAR will be the first satellite mission to use two different radar frequencies (L-band and S-band) to measure changes in our planet’s surface less than a centimetre across.
- Apart from S-band radar, ISRO is providing the spacecraft bus and the launch vehicle.

SAR

- SAR stands for ‘Synthetic Aperture Radar’ technique, responsible for producing high-resolution images from a resolution-limited radar system that NASA has used to measure changes in Earth’s surface.
- Because of the utter precision, the radar can penetrate clouds and darkness, which means that it is capable of collecting data in any weather and at any time in the day and in the night.
- The NISAR spacecraft accommodates two different, fully capable synthetic aperture radar (SAR) frequencies namely – L-band and S-band.
- The 24 cm wavelength L-band Synthetic Aperture Radar (L-SAR) is by NASA, while a 10 cm wavelength S-band (S-SAR) is provided by ISRO.
- The SAR will measure the changes in our planet’s surface less than a centimeter across. In this way, SAR beats the resolution limits of what can physically be put in space to provide images.



Effective treatment for severe scrub typhus identified

Why in News

A team of Indian scientists has identified a significantly more effective treatment for severe scrub typhus.

Important Points

- The study, published in the New England Journal of Medicine (NEJM), shows that treating patients with a combination of intravenous antibiotics doxycycline and azithromycin is more effective than the current monotherapy of using either drug alone.
- Using data from the Intravenous Treatment for Scrub Typhus (INTREST) clinical trial, researchers from several Indian institutes compared the efficacy and safety of three 7-day intravenous antibiotic treatments (doxycycline, azithromycin, or a combination of both) in patients with severe scrub typhus.
- They found that combination therapy was superior to therapy with intravenous doxycycline or azithromycin alone.
- INTREST is the largest-ever randomized controlled trial on the treatment of scrub typhus, and the only one on the treatment of severe scrub typhus.
- Researchers do not know for certain why a combination of doxycycline and azithromycin should be more clinically effective in the treatment of severe scrub typhus than either of the drugs alone.
- The study found that when both azithromycin and doxycycline were administered together to patients with severe scrub typhus, the bacteria were cleared away quicker and patients improved faster.
- This could be because doxycycline and azithromycin stop the bacteria from producing proteins through different, but complementary, mechanisms, the researchers said.
- As a consequence the combination of the two drugs may have reduced bacterial growth and multiplication, leading to quicker control of bacterial growth and more rapid resolution of symptoms, they said.
- The team at CMC Vellore collaborated with researchers at Mahidol Oxford Tropical Medicine Research Unit, Thailand, and Wellcome Trust Thailand Asia and Africa Programme for the study.

What is severe scrub typhus?

- Scrub typhus, also known as bush typhus, is a disease caused by a bacteria called *Orientia tsutsugamushi*.
- It is transmitted to humans by bites from tiny infected mites.
- Scrub typhus is a major public health threat in India, other South Asian countries, and around the tropics and kills an estimated 10 per cent of the approximately one million people infected by it every year.
- Scrub typhus typically presents as a fever that may be associated with headaches, coughs, shortness of breath, and brain symptoms, such as confusion and disorientation.
- One-third of patients develop a severe disease that affects multiple organs in the body and leads to lethally low blood pressures.
- Death rates in severe diseases can reach up to 70% without treatment and 24% with treatment.

DISEASE OVERVIEW		
WHAT IS SCRUB TYPHUS? <i>O. tsutsugamushi</i> is transmitted by chiggers (mite larvae), which feed on rodents such as rats, voles, and field mice. Human infection follows a chigger bite. These mites are vectors and a natural reservoir of <i>O. tsutsugamushi</i>	SYMPTOMS TO LOOK OUT FOR > Fever, chills, headache and swollen lymph nodes > With onset of fever, the bite mark is visible > Some may have cough that may lead to pneumonitis if unattended	> Some patients may exhibit rashes on the back, arms and legs
	IF LEFT UNATTENDED > Pulse rate increases, blood pressure drops > Patients develop delirium and organ failure	TREATMENT Largely antibiotics

GPT-4

Why in News

AI powerhouse OpenAI has recently announced GPT-4, the next big update to the technology that powers ChatGPT and Microsoft Bing, the search engine using the tech.

Important Points

GPT-4

- GPT-4 is a large multimodal model created by OpenAI and announced on March 14, 2023.

- GPT-4 is supposedly bigger, faster, and more accurate than ChatGPT, so much so, that it even clears several top examinations with flying colours, like the Uniform Bar Exam for those wanting to practice as lawyers in the US.
- The company has made the language model's powers known in its announcement blog for the same, saying that it is more creative and collaborative than ever before.
- Where GPT-3.5-powered ChatGPT only accepted text inputs, GPT-4 can also use images to generate captions and analyses.
- GPT-3 and GPT-3.5 only operated in one modality, text, meaning users could only ask questions by typing them out.
- Aside from the fresh ability to process images, OpenAI says that GPT-4 also “exhibits human-level performance on various professional and academic benchmarks.”
- The language model can pass a simulated bar exam with a score around the top 10 per cent of test takers and can solve difficult problems with greater accuracy thanks to its broader general knowledge and problem-solving abilities.
- For example, it can answer tax-related questions, schedule a meeting among three busy people, or learn a user's creative writing style.
- GPT-4 is also capable of handling over 25,000 words of text, opening up a greater number of use cases that now also include long-form content creation, document search and analysis, and extended conversations.

Difference between GPT-4 and GPT-3

GPT-4 can 'see' images now:

- The most noticeable change to GPT-4 is that it's multimodal, allowing it to understand more than one modality of information.
- GPT-3 and ChatGPT's GPT-3.5 were limited to textual input and output, meaning they could only read and write.
- However, GPT-4 can be fed images and asked to output information accordingly.
- If this reminds you of Google Lens, then that's understandable. But Lens only searches for information related to an image.
- GPT-4 is a lot more advanced in that it understands an image and analyses it.

GPT-4 is harder to trick:

- One of the biggest drawbacks of generative models like ChatGPT and Bing is their propensity to occasionally go off the rails, generating prompts that raise eyebrows, or worse, downright alarm people. They can also get facts mixed up and produce misinformation.
- OpenAI says that it spent 6 months training GPT-4 using lessons from its “adversarial testing program” as well as ChatGPT, resulting in the company's best-ever results on factuality, steerability, and refusing to go outside of guardrails.

GPT-4 can process a lot more information at a time:

- Large Language Models (LLMs) may have been trained on billions of parameters, which means countless amounts of data, but there are limits to how much information they can process in a conversation.
- ChatGPT's GPT-3.5 model could handle 4,096 tokens or around 8,000 words but GPT-4 pumps those numbers up to 32,768 tokens or around 64,000 words.
- This increase means that where ChatGPT could process 8,000 words at a time before it started to lose track of things, GPT-4 can maintain its integrity over way lengthier conversations.
- It can also process lengthy documents and generate long-form content – something that was a lot more limited on GPT-3.5.

GPT-4 has an improved accuracy:

- OpenAI admits that GPT-4 has similar limitations as previous versions – it's still not fully reliable and makes reasoning errors.
- However, GPT-4 significantly reduces hallucinations relative to previous models and scores 40 per cent higher than GPT-3.5 on factuality evaluations.
- It will be a lot harder to trick GPT-4 into producing undesirable outputs such as hate speech and misinformation.

GPT-4 is better at understanding languages that are not English:

- Machine learning data is mostly in English, as is most of the information on the internet today, so training LLMs in other languages can be challenging.
- But GPT-4 is more multilingual and OpenAI has demonstrated that it outperforms GPT-3.5 and other LLMs by accurately answering thousands of multiple-choice across 26 languages.
- It obviously handles English best with an 85.5 per cent accuracy, but Indian languages like Telugu aren't too far behind either, at 71.4 per cent. What this means is that users will be able to use chatbots based on GPT-4 to produce outputs with greater clarity and higher accuracy in their native languages.



India's first indigenous quadruped (four-legged) robot

Why in News

As part of the Atmanirbhar Bharat initiative, Hyderabad-based Svaya Robotics has developed India's first indigenous quadruped (four-legged) robot and exoskeleton for the defence sector.

Important Points

About quadruped (four-legged) robot

- Quadruped robots are four-legged robots which can walk or run in uneven and rough terrains.
- For example, in Leh, where soldiers have to navigate through unfavourable conditions, these robots can be used instead.
- These are also useful in recognising terrorist activities and other unsafe locations and capturing the visuals which can be monitored from any part of the country.
- He said the robots can carry 25 kg in payload and walk along with the soldier, and added that these robots can be used in nuclear plants and other industries as well.
- These active exoskeletons, when worn by soldiers, can carry such heavy loads without expending much effort. Even if they are carrying 25 kg, soldiers feel as if they are carrying six or seven kg, thus they are not fatigued easily.
- Both are dual-use robots and have multiple use cases in industry and healthcare as well.
- These robots can be enabled even in the areas where the Border Security Force (BSF), Central Reserve Police Force and other paramilitary and military forces operate.
- The indigenous robots and wearable exoskeletons were developed in collaboration with the DRDO Labs, Research and Development Establishment (R&DE), Pune, and the Defence Bioengineering and Electromedical Laboratory (DEBEL), Bengaluru, as technology demonstrators with their design inputs.
- India currently imports these robots from the US and Switzerland to help strengthen the country's defence capabilities.



NASA's new space suit

Why in News

Recently, NASA has unveiled a new spacesuit for its upcoming moon missions.

Important Points

About the new spacesuit

- For the upcoming Artemis missions, NASA's first attempt at landing astronauts on the moon since 1972, the spacesuit used will see a significant upgrade.
- Unlike the bulky and iconic suits in which Neil Armstrong and Buzz Aldrin skipped around on the lunar surface, the new suit will be "more nimble, comfortable and designed to fit a broader array of body types."

- The suit comes from Axiom Space, a private company based out of Houston, Texas, though it incorporates design elements used in previous suits by NASA.
- It will be worn during the Artemis III mission, the program's first moon landing, which is scheduled for 2025. It is called the AxEMU (Axiom Extravehicular Mobility Unit).
- New space suits most noticeable upgrade was in the mobility offered by the new spacesuits.
- Furthermore, the large clear bubble around the head provides a much wider range of visibility as well as lighting, which will be important when astronauts step into shadowed craters near the lunar south pole, where NASA hopes to study water ice. The headpiece also has a mount for a high-definition camera.
- Another important feature of the suit is its design which fits a broader range of body types comfortably, with provisions to make more specific adjustments in fit.
- As far as protection goes, the increased mobility has not come at its cost. The AxEMU has been specifically designed to better deal with lunar dust.

Significance of a space suit

- Without a spacesuit, humans will not survive for long in the harsh conditions of outer space or the lunar surface.
- First, spacesuits protect the human body from the extreme temperature fluctuations of space. In absence of an atmosphere, areas which receive direct sunlight become extremely hot whereas areas in the dark are frigid. The first job of a space suit is to insulate the astronaut inside from the extreme temperatures.
- Second, spacesuits also provide astronauts with a constant supply of air and optimum air pressure around their body. They are pressurised to this effect, making them more like human shaped space vehicles than a piece of clothing.
- Third, spacesuits protect astronauts from space radiation which can be extremely harmful, as well as micrometeorites and other particles moving across space, often at incredible speeds.
- On the lunar surface, suits also protect astronauts from lunar dust, considered by NASA experts as the “number one environmental problem on the moon”. Much more abrasive than dust on earth, it tends to corrode everything it comes into contact with and can potentially cause lung diseases.
- By helping astronauts survive even in the harshest conditions of space, spacesuits allow them to perform tasks in space, carry out experiments and fulfill the objectives of their mission.

Some of the issues with older space suits

- The Apollo missions (1961-72) were a landmark achievement in space exploration. The spacesuits worn in the mission were also revolutionary for the time.
- Unlike rudimentary spacesuits used for previous space missions, the Apollo suits had their own life support systems and did not balloon when exposed to the vacuum of space.
- They also incorporated boots ideal for walking on the lunar surface. Technological tweaks aside, little has changed in the fundamentals of suits for spacewalking that are used in the International Space Station.
- However, these suits are rigid and uncomfortable to be in. While rubberised bellows at the shoulders, elbows, hips and knees allowed a degree of flexibility, astronauts struggle against the stiffness.
- This is why Armstrong and Aldrin soon discovered that “skipping” was easier than “walking” on the lunar surface, as it did not require bending knees.
- Long handles were used in various tools as bending the waist was nearly impossible, though even holding things is difficult due to the gloves worn.



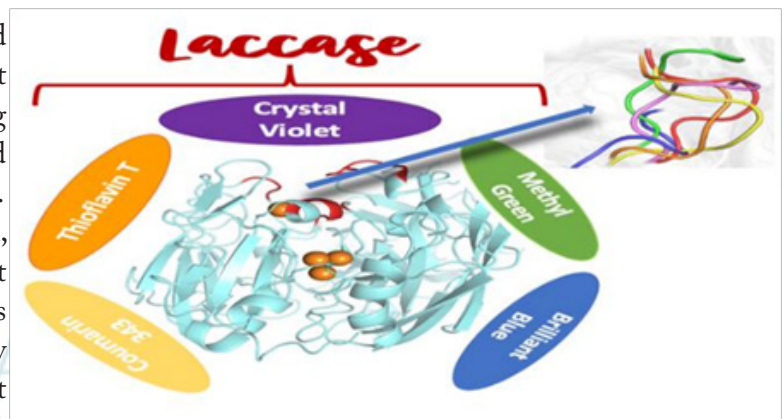
Laccase enzyme

Why in News

An enzyme called laccase generated by a group of fungi has been found capable of degrading a variety of hazardous organic dye molecules that are regularly drained into waterbodies after dyeing clothes in the textile industry.

Important Points

- Laccase, was known for its capacity to degrade various organic molecules. Hence the scientists saw a scope in using it to develop a technology to treat/degrade the dye effluents emanated from textile industries.
- This observed characteristic which the scientists termed substrate promiscuity can have deep implication in designing enzyme-coated cassettes for treating heavily dye-polluted water through a natural solution to make the environment greener.
- A joint team scientists from S. N. Bose National Center for Basic Sciences (SNBNCBS), Kolkata, an autonomous institute of Department of Science and Technology (DST) tested the efficacy of laccase in degrading some standard dye molecules like Methyl Green, Crystal Violet, Thioflavin T, Coumarin 343, and Brilliant Blue.
- Combining UV/Visible spectroscopy and computer simulations they demonstrated that many organic dye molecules with varying kinetics and wide variation in charge, size and shape can be degraded by the enzyme laccase.
- Laccase, generated by a group of fungi, contains 4 copper atoms in two different oxidation states, and degrades substrates through redox reactions, producing only water and simplest non-virulent or less virulent oxides of carbon, nitrogen and sulphur.
- This substrate promiscuity of laccase offers an immense biotechnological potential for a broad-spectrum degrader for industrial dye effluents.



LVM-3

Why in News

Isro's LVM-3 to launch second fleet of 36 satellites Sunday, completing OneWeb constellation

Important Points

- In its second commercial launch, India's heaviest launch vehicle LVM-3 will launch a fleet of 36 OneWeb satellites, completing the first generation of the huge broadband constellation.
- The launch is scheduled for March 26 at 9:00 am from the second launch pad of the country's only spaceport at Sriharikota in Andhra Pradesh.
- The final launch will enable the company to initiate global coverage.
- The satellites have already been integrated and the rocket is in place at the launch pad ahead of launch.
- This is the second OneWeb fleet that India is launching, with the first being carried out by the same vehicle in October 2022. This initiated India's journey into the commercial heavy lift-off space.
- The United Kingdom-based company, backed by the UK government and India's Bharti, plans to create a 588-satellite strong constellation to provide high-speed, low-latency global connectivity.



- These satellites will be placed in 12 rings of 49 satellites each, with every satellite completing a full trip around the Earth in 109 minutes.
- Next launch will be the 18th fleet to be launched by the company.
- OneWeb's high-speed, low-latency solutions will help connect communities, enterprises, and governments around the world, demonstrating the unparalleled potential of LEO (low earth orbit) connectivity.
- Across India, OneWeb will bring secured solutions not only to enterprises but also to towns, villages, municipalities and schools, including the hardest-to-reach areas across the country.
- In the previous mission, the 36 satellites were launched in a 600 km circular orbit around the Earth in a precise manner. The separation has to be sequenced in such a way that the customer requirement of a minimum 137 metre distance between any pair of satellites is maintained.
- This is achieved by orienting and reorienting the cryo stage (third stage of the rocket) using the on-board thrusters during the previous mission.
- The same challenge will be faced by the launch vehicle during next launch.
- Till the OneWeb India-1 mission in October, the heavy launch vehicle had carried only a single satellite during its two development flights and its first operational flight carrying onboard Chandrayaan-2.
- The OneWeb satellites were initially to be launched by Russia.
- Although India has managed to fill the void created by Russia due to the war [in Ukraine], there is a need for ISRO to now create its own space in the sector.
- Despite being one of the major space-faring nations, India accounted for only about 2 per cent of the commercial market. With the space sector opened up to private players in 2020, this is likely to increase as more and more companies are developing their own small satellite launch capabilities.

Asia's largest four metre International Liquid Mirror Telescope

Why in News

The Union Minister of State (Independent Charge) Science & Technology has recently inaugurated Asia's largest 4-metre International Liquid Mirror Telescope (ILMT) at Devasthal in Uttarakhand.

Important Points

- It is the first liquid mirror telescope designed exclusively for astronomical observations and this is the largest aperture telescope available in the country at present and is also the first optical survey telescope in India.
- Aryabhata Research Institute of Observational Sciences (ARIES) announced that the world-class 4 metre ILMT is now ready to explore the deep celestial sky. It achieved its first light in the 2nd week of May 2022.
- The telescope is located at an altitude of 2450 metre at the Devasthal Observatory campus of ARIES, an autonomous institute under the Department of Science and Technology (DST), Government of India in Nainital district, Uttarakhand.
- The ILMT collaboration includes researchers from ARIES in India, the University of Liège and the Royal Observatory of Belgium in Belgium, Poznan Observatory in Poland, the Ulugh Beg Astronomical Institute of the Uzbek Academy of Sciences and National University of Uzbekistan in Uzbekistan, the University of British Columbia, Laval University, the University of Montreal, the University of Toronto, York University and the University of Victoria in Canada.
- The telescope was designed and built by the Advanced Mechanical and Optical Systems (AMOS) Corporation and the Centre Spatial de Liège in Belgium.
- The ILMT employs a 4-metre-diameter rotating mirror made up of a thin layer of liquid mercury, to collect and focus light.
- The metal mercury is in liquid form at room temperature and at the same time highly reflective. It is ideally suited to form such a mirror.
- The ILMT is designed to survey the strip of the sky passing overhead each night, allowing it to detect transient or variable celestial objects such as supernovae, gravitational lenses, space debris, and asteroids.
- While scanning the strip of the sky every night, the telescope will generate nearly 10-15 Gigabytes of data and the wealth of ILMT generated data will permit the application of Big Data and Artificial Intelligence/ Machine Learning (AI/ML) algorithms that will be implemented for classifying the objects observed with the ILMT.

- The data will be analyzed quickly to discover and discern variable and transient stellar sources.
- The 3.6 metre DOT, with the availability of sophisticated back-end instruments, will allow rapid follow-up observations of the newly-detected transient sources with the adjacent ILMT.
- The data collected from the ILMT, over an operational time of 5 years, will be ideally suited to perform a deep photometric and astrometric variability survey.
- There are primarily three components in the liquid mirror telescope:
 1. A bowl containing a reflecting liquid metal (essentially mercury).
 2. An air bearing (or motor) on which the liquid mirror sits.
 3. A drive system.
- Liquid mirror telescopes take advantage of the fact that the surface of a rotating liquid naturally takes on a parabolic shape, which is ideal for focusing light.
- A scientific grade thin transparent film of mylar protects the mercury from wind.
- The reflected light passes through a sophisticated multi-lens optical corrector that produces sharp images over a wide field of view.
- A 4k - 4k CCD camera, located above the mirror at the focus, records 22 arcminute wide strips of the sky.



Ceramic Radomes

Why in News

Recently, Carborundum Universal Limited (CUMI) has signed a Licensing Agreement for Transfer of Technology with the DRDO for manufacturing ceramic radomes used in aerospace and missile systems.

Important Points

Ceramic radome technology

- Ceramic radome is regarded as an essential, state-of-the-art technology for ballistic and tactical missiles and high-performance aircraft.
- Missiles undergo extremely high surface temperatures while travelling through the atmosphere, and while re-entering it from space.
- To withstand those temperatures, radomes located at the tip of a missile are made of ceramic.
- The ceramic radomes have been developed indigenously by Research Centre Imarat (RCI), one of the premier DRDO labs in the Dr APJ Abdul Kalam Missile Complex, which has developed India's missile arsenal. RCI spearheads R&D in a diverse range of avionics systems for missile and aerospace applications.
- RCI is India's premier laboratory for carrying out R&D in the technologies of control engineering, inertial navigation, imaging infrared seekers, radio frequency seekers and systems, on-board computers and mission software.

Carborundum Universal (CUMI) Ltd

- Carborundum Universal Ltd, a part of Murugappa Group, is one of the largest and oldest conglomerates in India.
- It is the leading manufacturer and developer of abrasives, ceramics, refractories, aluminium oxide grains, machine tools, polymers, adhesives and electro minerals in India.
- It has extensive experience in engineering lightweight ceramic ballistic solutions, such as bulletproof vests, using zirconia-toughened alumina and silicon carbide.
- CUMI's lightweight ceramic materials are also used for providing high levels of ballistic and blast-proof protection for armoured vehicles.
- It is one of India's first companies to produce the wonder material graphene for aerospace and defence applications. Its cutting-edge composite technology is also used for building unmanned aerial vehicles.
- CUMI, established as a tripartite joint venture in 1954, is a leading materials sciences engineering solutions provider.

Vision document for rollout of 6G network in India

Why in News

The Prime Minister unveiled the Bharat 6G Vision Document and launched the 6G R&D Test Bed recently.

Important Points

- Bharat 6G vision document is prepared by the Technology Innovation Group on 6G (TIG-6G) that was constituted in November 2021 with members from various Ministries/Departments, research and development institutions, academia, standardization bodies, Telecom Service Providers and industry to develop a roadmap and action plans for 6G in India.
- As per the document, India's 6G project will be implemented in two phases, and the government has also appointed an apex council to oversee the project and focus on issues such as standardisation, identification of the spectrum for 6G usage, create an ecosystem for devices and systems, and figure out finances for research and development, among other things.
- While, technically, 6G does not exist today, it has been conceived as a far superior technology promising internet speeds up to 100 times faster than 5G.
- The apex council will facilitate and finance research and development, design and development of 6G technologies by Indian start-ups, companies, research bodies and universities.
- It will aim to enable India to become a leading global supplier of intellectual property, products and solutions of affordable 6G telecom solutions and identify priority areas for 6G research based on India's competitive advantages.
- A key focus of the council will be on new technologies such as Terahertz communication, radio interfaces, tactile internet, artificial intelligence for connected intelligence, new encoding methods and waveforms chipsets for 6G devices.
- As per the vision document, 6G use cases will include remote-controlled factories, constantly communicating self-driven cars and smart wearables taking inputs directly from human senses.
- However, while 6G promises growth, it will simultaneously have to be balanced with sustainability since most 6G supporting communication devices will be battery-powered and can have a significant carbon footprint, the document said.
- As part of its 6G mission, India will identify priority areas for research by involving all stakeholders including industry, academia and service providers spanning theoretical and simulation studies, proof-of-concept prototypes and demonstrations and early market interventions through startups, the vision document said.
- The 6G project is proposed to be implemented in two phases: the first one from 2023 to 2025 and the second one from 2025 to 2030.
- In phase one, support will be provided to explorative ideas, risky pathways and proof-of-concept tests. Ideas and concepts that show promise and potential for acceptance by the global peer community will be adequately supported to develop them to completion, establish their use cases and benefits, and create implementational IPs and testbeds leading to commercialisation as part of phase two.
- The vision document also said that the government will have to explore shared use of spectrum, particularly in the higher frequency bands for 6G.
- A reassessment and rationalisation of congested spectrum bands, and adoption of captive networks for Industry 4.0 and enterprise use cases will also have to be done.
- To fund research and innovation on 6G, the document recommended the creation of a corpus of Rs 10,000 crore to facilitate various funding instruments such as grants, loans, VC fund, fund of funds, etc. for the next 10 years.
- Two tiers of grants are proposed i.e. up to Rs 20 crore to service funding requirements ranging from small to medium and grants above Rs 20 crore for high impact projects.
- PM formally launched 5G services in October 2022 and said at the time that India should be ready to launch 6G services in the next 10 years.
- As opposed to 5G, which at its peak can offer internet speeds up to 10 Gbps, 6G promises to offer ultra-low latency with speeds up to 1 Tbps.

ITU Area office in India

- During the same event, PM also inaugurated the new International Telecommunication Union (ITU) Area office & Innovation Centre in India.
- ITU is the United Nations' specialized agency for information and communication technologies (ICTs).
- Headquartered in Geneva, ITU has a network of field offices, regional Offices and area offices.
- India signed a Host Country Agreement in March 2022 with ITU for the establishment of Area Office.
- The Area Office in India is also envisaged to have an Innovation Centre embedded in it making it unique among other area offices of ITU.
- The Area Office, which is fully funded by India, is located on the second floor of the Centre for Development of Telematics (C-DoT) building at Mehrauli New Delhi.
- It will serve India, Nepal, Bhutan, Bangladesh, Sri Lanka, Maldives, Afghanistan and Iran, enhancing coordination among nations and fostering mutually beneficial economic cooperation in the region.

Biotransformation technology

Why in News

A UK-based startup now claims to develop Biotransformation technology that can transform the state of plastics.

Important Points

Biotransformation technology

- The Biotransformation Technology presents a new and innovative strategy for effectively and efficiently processing plastics that evade refusing streams resulting in their decomposition. The term refuses stream refers to the flow of solid waste materials that are generated from various sources.
- Imperial College in London, UK, and a Britain-based startup, Polymateria have co-developed the technology.
- It claims the technology would digest the plastic packaging waste naturally with the help of microbes and biodegrade the waste without leaving behind any microplastics.
- The technology produces plastics that have a predetermined lifespan in which they maintain the appearance and quality of traditional plastics.
- However, once this lifespan expires and they are exposed to the surrounding environment, they undergo a self-destructive process and biotransform into wax that is bioavailable. Microorganisms then consume this wax, leading to the conversion of waste into water, carbon dioxide, and biomass.
- This biotransformation technology is the world's first that ensures polyolefins fully biodegrade in an open environment causing no microplastics.

Usage:

- The technology can be used in many industries but will be particularly beneficial for the food and healthcare industry as they generate a significant proportion of plastic waste.
- Some companies are even using such technologies, but Biotransformation will work as a complete game changer in the efforts.
- At a time when the world is producing around 400 million tonnes of plastic waste every year, such technologies can go a long way in providing an environment-friendly alternative to the dangerous plastic.
- Some well-known Indian firms in food and packaging industries deploy such technologies.
- Within healthcare and pharma industries, this technology provides biodegradable solutions for non-woven hygiene products like diapers, sanitary napkins, facial pads, etc.

Plastic waste in India

- The country is generating 3.5 billion kgs of plastic waste annually and that the per capita plastic waste generation has also doubled in the past five years. Of this, a third comes from packaging waste.
- In 2019, plastic packaging waste from e-commerce firms was estimated at over a billion kilograms worldwide
- A joint research project by Department of Management Studies, IIT Delhi, and Sea Movement noted that Amazon generated, nearly 210 million kgs (465 million pounds) of plastic from packaging waste in 2019.
- They also estimated that up to 10 million kgs (22.44 million pounds) of Amazon's plastic packaging ended up in the world's freshwater and marine ecosystems as pollution in the same year.

- However, Amazon India has now eliminated the single-use plastics across its fulfilment centers. Flipkart has also done the same in 2021 across its supply chain.

India's initiatives

- The Indian government has launched multiple initiatives to move the country towards sustainability.
- They introduced a plastic waste management gazette to help tackle the ever-growing plastic pollution caused by single-use plastics.
- In 2022 the Indian government imposed a ban on single-use plastics to bring a stop to its use in the country.
- The National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management brings all stakeholders together to track the progress made in eliminating single-use plastic and effectively managing such waste.
- An Extended Producer Responsibility (EPR) portal helps in improving accountability traceability, and facilitating ease of compliance reporting in relation to EPR obligations of the producers, importers and brand-owners.
- India has also developed a mobile app to report single use plastics grievances to check sale, usage or manufacturing of single use plastics in their area.



TRANSFORM IAS
Transforming Lives with Education

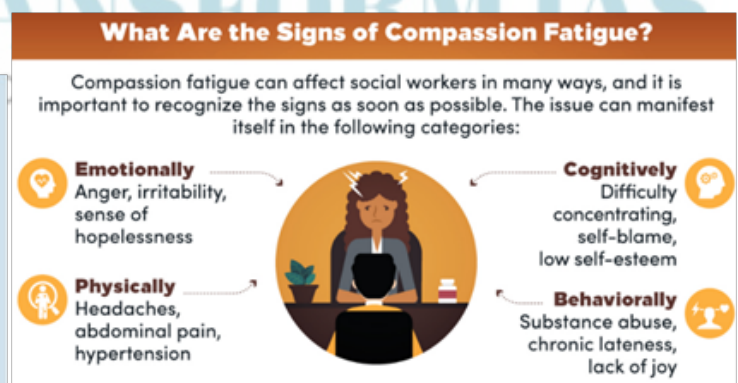
Compassion Fatigue

Why in News

Online depictions of tragic events, offensive news etc. have all contributed to an increase in compassion fatigue cases in recent years.

Important Points

- Compassion fatigue is a condition characterized by emotional and physical exhaustion leading to a diminished ability to empathize or feel compassion for others, often described as the negative cost of caring. It is sometimes referred to as secondary traumatic stress.
- The phenomenon, known as compassion fatigue, or empathy burnout, causes us to lose our capacity to react and help those in need.
- Compassion is an unstable emotion. It needs to be translated into action, or it withers.
- The underlying psychological mechanism behind compassion fatigue is desensitization.
- Violence in digital media formats like video games and films can desensitize people's responses to suffering or violence in real life.
- It's a kind of emotional or attentional filtering that protects us from suffering becoming too stressful or traumatic to cope with.
- However, compassion fatigue can be reversed.



Consequences of Compassion Fatigue

- Untreated compassion fatigue has several overarching consequences, both direct and indirect, for the field of social work.

Direct consequences (for the social worker) include:

- Poor job performance because of sleep deprivation, stress, and other unhealthy functioning
- Negativity, leading to low morale and a toxic work environment

Indirect consequences (for the social work system) include:

- Inability of organizations to deliver high-quality patient care
- High levels of employee turnover
- Inadequate social service provisions
- Because of these negative repercussions, compassion fatigue should be recognized early and dealt with swiftly.

Protected forests of Buxwaha

Why in News

More than two lakh trees need to be felled for an open-cast diamond mine (proposed Bunder diamond block) to operate in Buxwaha, and the people of Buxwaha have been protesting to prevent the felling of trees.

Important Points

Bunder diamond project

- The proposed project will be spread across an area of 364 hectares in the Buxwaha forests that is about 225 km northeast of Bhopal, Madhya Pradesh's capital.
- The block is estimated to have 34 million carats of rough diamonds. The National Mineral Development Corporation's existing diamond mine is about 175 kilometres from Bunder.
- The Bunder mining project falls under the Bundelkhand region of India, which is a water-stressed area.
- Environmentalists believe that the huge water requirement for diamond mining would add to the water woes of the region.
- According to the mining firm, it plans to develop a fully mechanised opencast mine and state of the art processing plant for recovery of diamonds with an investment of about Rs 2,500 crore.
- It noted that the project, once operational, has the potential to become one of the largest diamond mines in the Asian region.
- However, the project is facing stiff opposition, including social media campaigns.
- Already, a Public Interest Litigation has been filed in the Supreme Court of India, seeking a stay on the project that had been secured by the Essel Mining & Industries Limited in 2019.

About Buxwaha

- Buxwaha forest which extends over a vast area of 3 lakh hectares is in the Chhatarpur district, Bundelkhand region, Madhya Pradesh.
- This forest is home to some rare species of animals like Indian Gazelles, Chowsingha, Sloth Bears, Leopard, Tiger, Monitor Lizards, Indian Rumped Vultures, and Peacock.
- It also sustains trees with medicinal benefits like Teak, Ken, Behda, Banyan, Jamun Tendu, Khair, Bel, Dhava, Seja, Ghoat, Renjha, Amltas, Saugon, etc.



World Bank's Women, Business and the Law report 2023

Why in News

The World Bank has recently released report titled Women, Business and the Law on life cycle of working women.

Important Points

- It is the ninth in a series of annual studies measuring the laws that affect women's economic opportunity in 190 economies.
- It presents eight indicators structured around women's interactions with the law as they progress through their lives and careers: Mobility, Workplace, Pay, Marriage, Parenthood, Entrepreneurship, Assets, and Pension.

The index is divided into three categories:

1. Starting a job.
 2. During employment.
 3. After employment.
- It identifies barriers to women's economic participation and encourages the reform of discriminatory laws.
 - In 2023, the study also includes new research, a literature review, and analysis of 53 years of reforms for women's right.
 - It also provides the first comprehensive assessment of annual data gathered over more than five decades— from 1970 through 2022.
 - A score of 100 on the Index means that women are on an equal standing with men on all the eight indicators being measured.
 - Out of the 190 economies covered in the Index, only 14 scored a perfect 100: Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Latvia, Luxemburg, The Netherlands, Portugal, Spain and Sweden.
 - Globally, on average, women enjoy only 77 percent of the legal rights that men do; and nearly 2.4 billion women of working age around the world live in economies that do not grant them the same rights as men.
 - Moreover, in 2022, the global pace of reforms toward equal treatment of women under the law has slumped to a 20-year low.

India's performance

- India scored 74.4 out of a possible 100 in the World Bank index on life cycle of working women.
- India scored higher than the 63.7 average for the South Asian region, though lower than Nepal which had the region's highest score of 80.6.
- For India, the Index used data on the laws and regulations applicable in Mumbai, viewed as the country's main business city.
- However, India lags behind when it comes to laws affecting women's pay, laws affecting women's work after having children, constraints on women starting and running a business, gender differences in property and inheritance, and laws affecting the size of a woman's pension.
- Recommending that India consider reforms to improve legal equality for women, the report noted that one of the lowest scores for India comes from the indicator assessing laws affecting women's pay.



Regulation of synthetic colours & other colours in India

Why in News

On the occasion of Holi, most of us play with harmful colours. In this context, let's understand what are organic and synthetic colours & how these colours are regulated in India.

Important Points

Cause of concern

- Traditionally, Holi, a harvest festival, was played with colours made of spring flowers which bloom this time of the year, and other natural ingredients such as leaves, tree bark, etc.
- Over the years, colours made from chemicals flooded the market, easy on the pocket and leaving long-lasting stains.
- Today, genuinely natural gulaal or colour is made from dried flower petals, vegetable dyes, starch, leaves, etc. However, some manufacturers also use food-grade colours, which, though technically fit for consumption, are synthetic.
- Not all manufacturers display any accreditation or hallmark to prove that their product is all it claims to be.
- While some packets do state they are certified by National Accreditation Board for Testing and Calibration Laboratories or the International Organization for Standardization (ISO), others simply say they are "lab-tested".
- The list of ingredients most mentions flowers and plants, but if the starch or essential oil used is not mentioned, that means the list is incomplete.

FSSAI permitted food colours and flavours

- Only the FSSAI permitted food colours and flavours can be used in food items. FSSAI-Approved Food Colours are:
 - Erythrosine- It imparts the food a red colour,
 - -carotene: It is commonly called C.I. natural yellow 26 and belongs to the class of carotenoids. It contains all trans--carotene
 - Chlorophyll: Chlorophyll, also known as C. I. Natural green 3, is a plant-based green pigment is used as a colouring material for foods.
 - Riboflavin: It is yellow to orange-yellow and approved for the use in food products as a colourant.

Why are synthetic colours unsafe?

- Multiple studies over the years have shown that synthetic colours have chemicals that can harm your skin, respiratory tract, and eyes.
- These chemicals also harm the environment, adding particulate matter (PM) to the air and taking years to decompose.
- A 2009 study in the Indian Journal of Dermatology, titled 'The Holi Dermatoses: Annual Spate of Skin Diseases Following the Spring Festival in India', says, "Some of the popular colors and their ingredients are black (lead oxide), green (copper sulfate and malachite green), silver (aluminum bromide), blue (Prussian blue), and red (mercury sulfate).

- The dry colors, commonly known as 'gulals' or 'abeer', have two components – a colorant and a base, both of which may cause cutaneous problems.
- Mica dust is often added as a sparkling agent to the dry powders that can lead to multiple microtraumas of skin and predisposition to infections.
- Use of contaminated starch or wheat flour can further increase the chances of skin or ocular infections.
- Particulate matter are basically tiny pieces of solids or liquids suspended in the air, that can get into your eyes, nose, throat, and lungs, causing infections and breathing trouble.
- A 2016 study published in the National Library of Medicine, titled 'Holi colours contain PM10 and can induce pro-inflammatory responses.

About Holi festival

- Holi also known as the Festival of Colours, Festival of Spring, and Festival of Love, is one of the most popular and significant festivals in Hinduism. It celebrates the eternal and divine love of the god Radha and Krishna.
- The day also signifies the triumph of good over evil, as it commemorates the victory of Vishnu as Narasimha Narayana over Hiranyakashipu. It originated and is predominantly celebrated in the Indian subcontinent but has also spread to other regions of Asia and parts of the Western world through the Indian diaspora.
- Holi celebrates the arrival of Spring in India, the end of winter, and the blossoming of love, and for many, it is a festive day to meet others, play and laugh, forget and forgive, and repair broken relationships.
- The festival is also an invocation for a good spring harvest season.
- It lasts for a night and a day, starting on the evening of the Purnima (Full Moon Day) falling in the Hindu calendar month of Phalgun, which falls around the middle of March in the Gregorian calendar.

National Accreditation Board for Testing and Calibration Laboratories (NABL)

- It is a Constituent Board of Quality Council of India. NABL has been established with the objective to provide Government, Industry Associations and Industry in general with a scheme for third-party assessment of the quality and technical competence of testing and calibration laboratories.
- In order to achieve this objective, NABL provides laboratory accreditation services to laboratories that are performing tests / calibrations in accordance with ISO/IEC 17025:2005 and ISO 15189:2012 for medical laboratories. These services are offered in a non-discriminatory manner and are accessible to all testing and calibration laboratories in India and abroad, regardless of their ownership, legal status, size and degree of independence.
- Based on evaluation of NABL operations by APAC in 2000, NABL has been granted signatory member status by APAC and International Laboratory Accreditation Cooperation (ILAC) under their Mutual Recognition Arrangements (MRAs).

Kinzhal & Zircon hypersonic missiles

Why in News

Russia has recently unleashed its biggest aerial strike against Ukraine using six hypersonic missiles, known as Kinzhals, or Daggers.

Important Points

Kinzhal missile

- Unveiled in 2018, Kinzhal, according to the Russians, is capable of reaching speeds of Mach 10 and greater, with a range of about 1,250 miles.
- The missile is also believed to be nuclear-capable and usually launched by MiG-31 warplanes. It was first used against Ukraine in 2022.
- Apart from Kinzal, Moscow reportedly has two other types of hypersonic missile systems.
- One is the Avangard hypersonic glide vehicle, which can fly at speeds as high as Mach 27
- And the other is the Zircon anti-ship missile. However, there have been no reports of Zircon or Avangard being used in a war.

Zircon missile

- It is a scramjet powered maneuvering anti-ship hypersonic cruise missile.

- It can travel more than five times the speed of sound and manoeuvre in mid-flight, making them much harder to track and intercept than traditional projectiles.
- It could hit targets at sea and on land with a range of 1,000 kilometres (620 miles).
- The Zircon looks set to join Avangard hypersonic glide vehicles that were put into service in 2019 and the air-launched Kinzhal (Dagger) missiles in Russia's arsenal.
- Russia had placed into service its first Avangard hypersonic missile in December 2019, making it the first country to claim an operable hypersonic weapon.

What is a hypersonic missile?

- A hypersonic missile, such as Kinzhal, is capable of flying at least at the speed of Mach 5, i.e. five times the speed of sound, and is manoeuvrable.
- The manoeuvrability of the hypersonic missile is what differentiates it from a ballistic missile, as the latter follows a set course or a ballistic trajectory.
- Thus, unlike ballistic missiles, hypersonic missiles do not follow a ballistic trajectory and can be manoeuvred to the intended target.
- This makes them extremely lethal because by the time they are detected by ground-based radars, they are already quite near to their target.
- There are two types of hypersonic weapons systems:
 - Hypersonic Glide Vehicles (HGV) and
 - Hypersonic Cruise Missiles.
- The HGVs are fired from a rocket before gliding to the intended target while the hypersonic cruise missile is powered by air-breathing high-speed engines or 'scramjets' after acquiring their target.
- Hypersonic weapons can enable responsive, long-range strike options against distant, defended or time-critical threats (such as road mobile missiles) when other forces are unavailable, denied access or not preferred.
- Conventional hypersonic weapons use only kinetic energy i.e. energy derived from motion, to destroy unhardened targets or even underground facilities.
- These systems are one of the more recent warfare technologies being developed by China, North Korea, Russia and the United States.

Hypersonic technology in India

- India has also developed Hypersonic Technology as the DRDO successfully launched the Hypersonic Technology Demonstrator Vehicle (HSTDV) in its maiden test.
- The HSTDV was an unmanned scramjet demonstration aircraft for hypersonic speed flight.
- It could cruise at a speed of Mach 6 and move up to an altitude of 32.5 km in 20 seconds.
- According to DRDO, besides its utility for long-range cruise missiles of the future, the dual-use technology will have multiple civilian applications also.
- It can be used for launching satellites at a low cost too.

Forest loss- India 2nd highest globally

Why in News

According to a report by Utility Bidder, a United Kingdom-based comparison site for energy and utility costs, India lost 668,400 ha forests in 5 years, 2nd highest globally.

Important Points

- The study highlighted the trend of deforestation of 98 countries with data collated from 1990 to 2000 and from 2015 to 2020 by Our World In Data, an online data repository.
- India ranked the second highest for the rate of deforestation after losing 668,400 hectares of forest cover in the last 30 years.
- Brazil and Indonesia clocked in at first and third respectively with Brazil recording 1,695,700 hectares and Indonesia recording 650,000 hectares of deforestation.
- Zambia recorded the second biggest deforestation increase for the same period, with a rise to 189,710 ha between 2015 and 2020, compared to 36,250 ha from 1990-2020.
- India also topped the chart for biggest increase in deforestation between 1990 and 2020 with a difference of 284,400 hectares in forestry loss.

- India's deforestation rose from 384,000 hectares between 1990 and 2000 to 668,400 hectares between 2015 and 2020.
- However, India plans to restore 20 million hectares of its forest cover by 2030.
- As the country with the second largest population in the world, India has had to compensate for the increase in residents — this has come at a cost in the way of deforestation.
- Brazil, which ranked first with 1,695,700 ha of deforestation between 2015 and 2020, mostly lost the forests due to climate change. However, this is much lower than the 4,254,800 ha it lost between 1990 and 2000.
- Palm oil cultivation in Indonesia led to the destruction of 650,000 ha of forests, making it the third-highest loss in the world, right behind India.
- The study further revealed that cattle rearing was the leading cause of global deforestation, leading to a loss of 2,105,753 ha annually. This was followed by the cultivation of oil seeds that caused 950,609 ha of forestry loss.
- After cattle rearing for meat and oil seed cultivation, logging is the third highest factor responsible for deforestation, causing around 678,744 ha of annual deforestation globally.



World Happiness Report 2023

Why in News

The United Nation Sustainable Development Solutions Network has released the World Happiness Report 20 March, the International Day of Happiness.

Important Points

- It ranks countries on happiness based on three preceding years' data of their average life evaluations.
- The report is a comprehensive study that aims to measure and understand the factors that contribute to human well-being and happiness around the globe.
- It is based on data collected from surveys conducted in various countries, and it covers a range of topics including social connections, trust, and mental health.
- The 2023 edition of the World Happiness Report focuses on the theme of 'trust and social connections in times of crisis'.
- The report examines how trust and social connections have been affected by the COVID-19 pandemic, and how these factors have influenced people's well-being and happiness a lot.
- According to the report, Finland Takes Top Spot, Denmark stands second, followed by Iceland at number three; Israel and the Netherlands at fourth and fifth positions respectively.
- The top ten countries in the ranking were all located in Europe, with New Zealand being the only non-European country to make it to the top 10 list.
- The ranking uses 6 main factors to measure happiness, which includes social support, freedom, generosity, income, health, and absence of corruption.
- The report notes that the COVID-19 pandemic has had a significant impact on people's life and happiness. The pandemic has led to increased levels of anxiety and depression, as well as social and economic stressors.
- The report also highlights the resilience of people around the world and the ways in which communities have come together to support one another during this challenging time.
- India stands 126th on the list out of 136 countries, making it one of the least happy countries around the world.
- Surprisingly, it even lags behind its neighbouring countries like Nepal (78th), China (64th), Bangladesh (118th), Pakistan (108th) and Sri Lanka (112th).
- At the very bottom of the World Happiness Report is Afghanistan at 137th position.

- Apart from promoting well-being and happiness, the report emphasises the need for governments to prioritise the well-being of their citizens, and to take steps to ensure that everyone has access to the resources and support they need to thrive.

UN Sustainable Development Solutions Network (SDSN)

- It was set up in 2012 under the auspices of the UN Secretary-General.
- It mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the Sustainable Development Goals (SDGs) and the Paris Climate Agreement.
- It works closely with United Nations agencies, multilateral financing institutions, the private sector, and civil society.
- It is guided by a Leadership Council, which brings together global sustainable development leaders from all regions and all sectors, including civil society, public, and private sectors.
- Much of SDSN's work is led by National or Regional SDSNs, which mobilize knowledge institutions around the SDGs.
- The SDG Academy leads the education work of the SDSN.
- SDSN Secretariat: Until 2016, the SDSN Secretariat was hosted by the Earth Institute at Columbia University. Since July 2016, the SDSN Secretariat and the SDG Academy have been hosted by the SDSN Association, a non-profit organization.
- It has offices in New York, Paris, and Kuala Lumpur.



Rajasthan Right to Health Bill

Why in News

The Rajasthan Assembly has recently passed the Right to Health (RTH), even as doctors continued their protest against the Bill, demanding its complete withdrawal.

Important Points

- It gives every resident of the state the right to avail free Out Patient Department (OPD) services and In Patient Department (IPD) services at all public health facilities and select private facilities.
- The free healthcare services, including consultation, drugs, diagnostics, emergency transport, procedure and emergency care, will be provided subject to conditions specified in the rules, which will be formulated now.
- Also, all residents will be entitled to emergency treatment and care without prepayment of any fee or charges, and the hospital can't delay treatment on grounds of police clearance if it is a medico-legal case.
- The legislation says that after emergency care, stabilisation and transfer of patient, if patient does not pay requisite charges, the healthcare provider shall be entitled to receive requisite fee and charges or proper reimbursement from the state government.
- The Bill extends a total of 20 Rights to the citizens of the state.
- As per the Bill, anyone found in contravention of the Act will be punishable with a fine of up to Rs 10,000 for the first contravention, and up to Rs 25,000 for the subsequent contraventions. However, many have pointed out that the penalty may be too low for hospitals.
- One of the most contentious issues of the RTH was emergency care, leading to protests by doctors.
- After being changed by the Select Committee, the clause that was eventually passed recently states that people will have the right to emergency treatment and care for accidental emergency, emergency due to snake bite/animal bite and any other emergency decided by the State Health Authority under prescribed emergency circumstances.
- Importantly, this can be availed without prepayment of requisite fee or charges for prompt and necessary emergency medical treatment and critical care, emergency obstetric treatment and care, by any public or private health institution qualified to provide such care or treatment according to their level of health care.

Ocean desalination as a solution to water crisis

Why in News

Amid an 'imminent' global water crisis, the desalination of our oceans into drinking water has emerged as the ultimate means to drought-proof regions suffering water poverty.

Important Points

Ocean desalination technology

- The centuries-old concept uses thermal distillation or a reverse osmosis membrane to separate salt from the sea.
- The technique is now being utilized globally, with well over 20,000 desalination plants currently operating in over 170 countries — the 10 largest in Saudi Arabia, the United Arab Emirates (UAE) and Israel.
- Around 47% of the world's desalinated water is produced in the Middle East and North Africa alone, Manzoor Qadir, deputy director of the United Nations University Institute for Water, Environment and Health, told DW.
- These arid regions have few other options since they generate less than 500 cubic meters of water per capita through rainfall or river runoff — which is half the upper limit of water scarcity as defined by the UN. The United States, by contrast, produces 1,207 cubic meters of freshwater per person.
- Water poverty is set to worsen as populations increase along with temperatures, with Sub-Saharan Africa predicted to become a hotspot of water scarcity by 2050.
- It is a great option in terms of enhancing water resources & costs have "decreased tremendously" from around \$5 (\$4.69) per cubic meter (1,000 liters) in the 2000s to 50 cents today.
- For countries like Cyprus, there's no other option if they want to maintain this living standard. The hottest and driest nation in the EU, Cyprus relies on desalination for 80% of its drinking water.

Impacts of desalination on the marine and climate

- Before becoming a magic bullet for water scarcity, desalination presents some serious environmental trade-offs in its current guise.
- Firstly, separating salt from water is highly energy intensive.
- A 2021 study on the environmental consequences of removing salt from seawater in Cyprus co-authored by Kuepper showed that the four desalination plants in the country generate around 2% of its total greenhouse gas emissions. The plants also accounted for 5% of the total electricity consumption in Cyprus, representing one of the largest shares by sector of electricity consumption, according to the study.
- Furthermore, the report notes that desalinated water produced generated around 103 million cubic meters of toxic, high-salinity brine effluent that impacted the Mediterranean seagrass ecosystem in the region of the discharge pipes.
- Increased salinity, combined with climate-driven temperature rise, can cause a decrease in the dissolved oxygen content, resulting in conditions called hypoxia.
- This hypersaline water can sink to the ocean bed and kill marine microorganisms that are vital to the entire food chain.
- In addition, chemical compounds such as copper and chloride are also observable in the desalination pre-treatment process and can be toxic to organisms in the receiving water, according to the report.

How can desalination be made sustainable?

- The solution to the relatively high CO₂ emissions is to deploy renewables to power desalination plants.
- A Berlin-based company, Boreal Light, has developed off-grid solar and wind energy desalination plants that ensure greater energy independence and immunity from price fluctuations.
- Meanwhile, though brine discharge can be better diffused through outfall pipes that are not in the vicinity of vulnerable marine life, a better solution would be to keep the remnant solids on the land.
- The 2019 study on the state of desalination showed how sodium, magnesium, calcium, potassium, bromine, boron, strontium, lithium, rubidium and uranium could be harvested from the filtered material and reused in industry and agriculture. Recovery of these resources remains economically uncompetitive, however.
- This needs to change as reuse is an important sustainability solution, he added, especially in countries producing large volumes of brine with relatively low efficiencies, such as Saudi Arabia, UAE, Kuwait and Qatar.
- Scientists at the US research body, the Massachusetts Institute of Technology (MIT), have suggested ways to repurpose brine by using the salt to produce caustic soda, or sodium hydroxide.
- When used to pre-treat seawater entering the desalination plant, sodium hydroxide helps prevent the fouling of the reverse osmosis membranes used to filter the ocean water.

Government launches National Rabies Control Programme (NRCP)

Why in News

The Central Government has launched the National Rabies Control Programme (NRCP) for prevention and control of Rabies.

Important Points

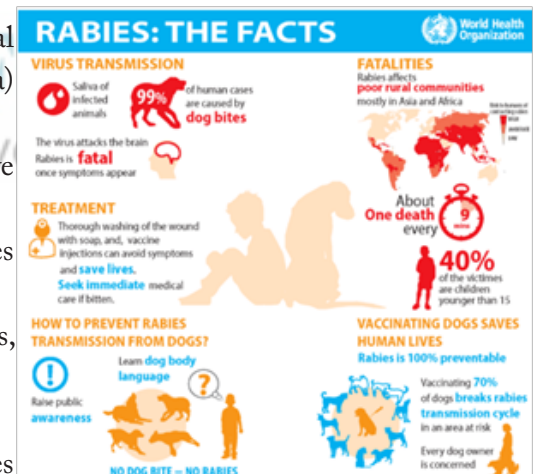
The Strategies of the National Rabies Control Program are as follows:

- Provision of rabies vaccine & rabies immunoglobulin through national free drug initiatives.
- Training on appropriate animal bite management, prevention and control of rabies, surveillance and intersectoral coordination.
- Strengthening surveillance of animal bites and rabies deaths reporting.
- Creating awareness about rabies prevention.



About Rabies

- Rabies is a vaccine-preventable, zoonotic, viral disease.
- It is one of the Neglected Tropical Diseases (NTD) that predominantly affects poor and vulnerable populations who live in remote rural locations.
- It is present on all continents, except Antarctica, with over 95% of human deaths occurring in the Asia and Africa regions.
- Initial symptoms of rabies include a fever with pain and unusual or unexplained tingling, pricking, or burning sensation (paraesthesia) at the wound site.
- As the virus spreads to the central nervous system, progressive and fatal inflammation of the brain and spinal cord develops.
- Transmission can also occur if saliva of infected animals comes into direct contact with human mucosa or fresh skin wounds.
- It is spread to people and animals through bites or scratches, usually via saliva.
- Once clinical symptoms appear, rabies is virtually 100% fatal.
- In up to 99% of cases, domestic dogs are responsible for rabies virus transmission to humans.
- Rabies can affect both domestic and wild animals.
- Interrupting transmission is feasible through vaccination of dogs and prevention of dog bites.
- 40% of people bitten by suspect rabid animals are children under 15 years of age.
- Immediate, thorough wound washing with soap and water after contact with a suspect rabid animal is crucial and can save lives.
- WHO leads the collective “United Against Rabies” to drive progress towards “Zero human deaths from dog-mediated rabies by 2030”.



Windsor Framework replaces Northern Ireland Protocol

Why in News

The UK government under Prime Minister Rishi Sunak reached a landmark deal with the European Union (EU) on post-Brexit trade rules that will govern Northern Ireland.

Important Points

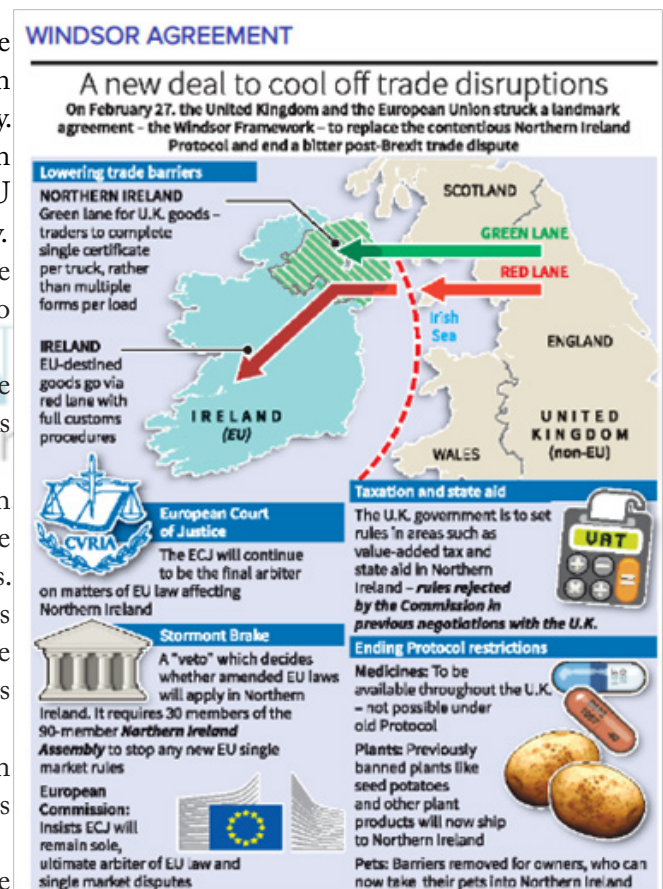
- The 'Windsor Framework' will replace the Northern Ireland Protocol, which had proved to be among the thorniest of Brexit fall-outs, creating problems both economic and political.

The Windsor Framework has two crucial aspects

- The introduction of a green lane and red lane system for goods that will stay in Northern Ireland and those that will go to the EU respectively.
 - The 'Stormont Brake', which allows Northern Ireland lawmakers and London to veto any EU regulation they believe affects the region adversely.
- British goods meant for Northern Ireland will use the green lane at the ports, and will be allowed to pass with minimal paperwork and checks.
 - Physical checks will be conducted if the goods are deemed suspicious, in place of the routine checks now.
 - This is especially significant for meat products, such as sausages, travelling between the two parts of the UK, as the EU has stricter rules about animal products.
 - Also, people in Northern Ireland can order goods online from Britain easily now. Because of the cumbersome checks, many firms had stopped deliveries to Northern Ireland.
 - Plants and seeds can move easily now, and pets can travel without expensive health treatments like rabies or documentation from a vet.
 - The same medicines, in the same packs, with the same labels, will be available across the UK, without the need for barcode scanning requirements under the old Protocol.
 - The UK will license all medicines for all UK citizens, including novel medicines like cancer drugs, rather than the European Medicines Agency under the old Protocol.
 - Goods destined for Ireland or the rest of the EU will have to take the red lane, with the attendant customs and other checks.

What is Stormont Brake?

- The new Stormont Brake means the democratically elected Northern Ireland Assembly can oppose new EU goods rules that would have significant and lasting effects on everyday lives in Northern Ireland. They will do so on the same basis as the 'petition of concern' mechanism in the Belfast (Good Friday) Agreement, needing the support of 30 members from at least two parties.
- The Stormont Brake has been introduced by fundamentally rewriting the Treaty and goes significantly further than the 'all or nothing vote' under the old Protocol every four years at most.



- Over 1,700 of EU law have been removed, and with it ECJ interpretation and oversight in areas like VAT, medicines, and food safety – so the UK Government can decide and UK courts can interpret. The minimal set of EU rules – less than 3% – apply to preserve the privileged, unrestricted access for Northern Ireland businesses to the whole of the EU Single Market and avoid a hard border on the island of Ireland.

Earlier Event

- After the UK left the European Union, Northern Ireland remained its only constituent that shared a land border with an EU-member, the Republic of Ireland.
- Since the EU and the UK have different product standards, border checks would be necessary before goods could move from Northern Ireland to Ireland.
- However, the two Irelands have had a long history of conflict, with a hard-fought peace secured only in 1998 under the Belfast Agreement, also called the Good Friday agreement.
- Fiddling with this border was thus considered too dangerous, and it was decided the checks would be conducted between Great Britain (England, Scotland and Wales) and Northern Ireland (which together with Great Britain forms the United Kingdom). This was called the Northern Ireland Protocol.
- Under the protocol, Northern Ireland remained in the EU single market, and trade-and-customs inspections of goods coming from Great Britain took place at its ports along the Irish Sea.
- The checks made trade between Great Britain and Northern Ireland cumbersome, with food products, especially, losing out on shelf life while they waited for clearance.

Fab 4 Chip Alliance

Why in News

The “Fab 4” semiconductor alliance of Taiwan, the United States, Japan and South Korea held its first video meeting of senior officials recently.

Important Points

- The “Fab” in the name refers to a shorthand of an industry term for the fabrication plants where chips are made and used for virtually everything from fridges to fighter jets.
- The countries that are members of the group in the Indo-Pacific region are home to some of the world’s largest contract chip makers.
- That includes Taiwan Semiconductor Manufacturing Co Ltd, South Korean memory chip giants Samsung Electronics Co Ltd, and SK Hynix, with Japan being the supplier of materials and equipment required to make the semiconductors.
- With the US as a chip design powerhouse and the other three countries having top capabilities in manufacturing and production of critical equipment and materials, the envisioned alliance would cover all major areas of the chips value chain.
- The first meeting of the group was held in September 2022 after a two-year global chip crunch which had prompted car manufacturers to halt production and exposed the larger supply chain issues.

What is a semiconductor or a chip?

- A semiconductor is a material product usually comprised of silicon, which conducts electricity more than an insulator, such as glass, but less than a pure conductor, such as copper or aluminum.
- Their conductivity and other properties can be altered with the introduction of impurities, called doping, to meet the specific needs of the electronic component in which it resides.
- Also known as semis, or chips, semiconductors can be found in thousands of products such as computers, smartphones, appliances, gaming hardware, and medical equipment.



Iran claims to have unearthed massive lithium deposit

Why in News

Iranian Ministry of Industry, Mine and Trade has said that a lithium deposit located in the western province of Hamedan contains some 8.5 million metric tons of lithium ore.

Important Points

- This is Iran's first lithium find.
- However, this discovery will not immediately be beneficial to Iran. It will take about four years to prepare the lithium mines discovered in Qahavand Plain, Hamadan, for operation, with the deposits stretching across a five-six square kilometer area.
- According to the US Geological Survey, the world's largest identified lithium resources (not counting Iran) are as follows: Bolivia, 21 million tons; Argentina, 20 million tons; Chile, 11 million tons; Australia, 7.9 million tons; China, 6.8 million tons.
- India recently established inferred lithium resources of 5.9 million tons in the Reasi district of Jammu and Kashmir.
- According to the United Nations Framework for Classification for Reserves and Resources of Solid Fuels and Mineral Commodities (UNFC 1997), resources are categorized using the three essential criteria affecting their recoverability:
 1. Economic and commercial viability (E).
 2. Field project status and feasibility (F).
 3. Geological knowledge (G).
- India's recent discovery was classified as G4: implying that they are a product of a reconnaissance study, rather than more advanced feasibility and commercial viability studies.
- According to the UNFC, "Reconnaissance study identifies areas of enhanced mineral potential on a regional scale based primarily on results of regional geological studies, regional geological mapping, airborne and indirect methods, preliminary field inspection, as well as geological inference and extrapolation. The objective is to identify mineralized areas worthy of further investigation towards deposit identification."
- It is likely that Iran's discovery is also at this stage of categorisation.
- If that is the case, more work is required to establish the commercial viability of the reserves but also a setup where the mining can be carried out.
- Especially in the context of the economic embargoes Iran faces, this will be a challenge.

The importance of lithium in today's world:

- Lithium is ubiquitous in modern life, found in all kinds of electronic devices, from mobile phones to EVs – basically, anything that requires a rechargeable battery.
- A battery is made up of an anode, cathode, separator, electrolyte, and two current collectors (positive and negative).
- Lithium-ion batteries use aqueous electrolyte solutions, where ions transfer to and fro between the anode (negative electrode generally made of graphite) and cathode (positive electrode made of lithium), triggering the recharge and discharge of electrons.
- Even promising alternatives to the lithium-ion batteries, such as QuantumScape Corp's solid-state lithium-metal battery, continue to use lithium.
- This is primarily due to Lithium's low weight as compared to other metals (such as nickel, used in traditional batteries) as well as its superior electrochemical potential.
- Lithium has become especially valuable in the context of increasing climate concerns with the internal combustion engine and the rise of electric vehicles (EV) as an alternative.
- Currently, all EVs use lithium in their battery packs with demand set to rise exponentially over the coming decades.



Australia-India education qualification recognition mechanism

Why in News

Australian Prime Minister Anthony Albanese has recently announced an 'Australia-India education qualification recognition mechanism'.

Important Points

- The new mechanism will mean that degrees obtained in Australia will now be recognised in India, and, vice-versa, degrees obtained in India will be recognised in Australia.
- This new mechanism was finalised by Australian Education Minister Jason Clare and Union Education Minister Dharmendra Pradhan during the former's visit to Delhi recently.
- India has other agreements with countries like the US.
- What makes this broader than the agreement with the US is it includes online courses also, apart from courses that Australian universities can run in India or at a standalone campus like the one that University of Wollongong is setting up.
- This agreement is expected to make it easier for Indians to go to Australia for both education and work, and vice-versa.
- However, this move will not apply to professional qualifications just yet. Professional registrations of engineering, medicine and law graduates will remain outside the ambit of this agreement.
- The Australian premier also confirmed that Geelong's Deakin University will be the first ever foreign university to have an offshore campus in India, to be set up in Gandhinagar's GIFT City.
- The campus is set to offer courses in cyber security and business analytics.

Maitri scholarship

- A new scholarship was also announced for Indian students studying in Australia.
- The 'Maitri' scholarships will provide financial assistance to Indian students in Australia for as long as four years.
- The scholarships are part of the wider Maitri (friendship) programme that seeks to boost cultural, educational and community ties between Australia and India.
- The 'Maitri' scholarship was first mentioned in a joint media statement by Australian ministers on February 14, 2022.
- The \$ 11.2 million Maitri Scholarships Program will attract and support high-achieving Indian students to study at Australian universities.
- It will showcase Australia's globally renowned academic and research institutions, particularly in science, technology, engineering, mathematics and health.



International Criminal Court

Why in News

The International Criminal Court has recently issued an arrest warrant for war crimes for President Vladimir Putin and a second Russian official.

Important Points

International Criminal Court

- It is an intergovernmental organization and international tribunal seated in The Hague, Netherlands.
- It was created two decades ago as a standing body to investigate war crimes, genocide and crimes against humanity under a 1998 treaty known as the Rome Statute.
- Previously, the United Nations Security Council had established ad hoc tribunals to address atrocities in places such as the former Yugoslavia and Rwanda.
- Many democracies joined the International Criminal Court, including close American allies including Britain. But the United States has long kept its distance, fearing that the court might one day seek to prosecute American officials, and Russia is also not a member.
- It investigates and, where warranted, tries individuals charged with the gravest crimes of concern to the international community: genocide, war crimes, crimes against humanity and the crime of aggression.

- The ICC lacks universal territorial jurisdiction, and may only investigate and prosecute crimes committed within member states, crimes committed by nationals of member states, or crimes in situations referred to the Court by the United Nations Security Council.
- It is the first and only permanent international court with jurisdiction to prosecute individuals for the international crimes of genocide, crimes against humanity, war crimes and the crime of aggression.
- It is distinct from the International Court of Justice, an organ of the United Nations that hears disputes between states.
- The ICC is governed by the Assembly of States Parties, which is made up of the states that are party to the Rome Statute. The Assembly elects officials of the Court, approves its budget, and adopts amendments to the Rome Statute. The Court itself, however, is composed of four organs: the Presidency, the Judicial Divisions, the Office of the Prosecutor, and the Registry
- As of November 2019, 123 states are parties to the Statute of the Court, including all the countries of South America, nearly all of Europe, most of Oceania and roughly half of Africa.
- While at least 42 nations have neither signed the treaty nor joined the organisation.
- India, like the US and China, is not a party to the Rome Statute.



Vienna Convention on Diplomatic Relations

Why in News

Hours after a group of people chanting pro-Khalistan slogans took down the Indian flag at the High Commission in London, the Indian government has summoned the “senior-most” UK diplomat and reminded basic obligations of the UK Government under the Vienna Convention.

Important Points

Vienna Convention

- The term “Vienna Convention” can refer to any of a number of treaties signed in Vienna, most of which are related to the harmonisation or formalisation of the procedures of international diplomacy.
- The treaty being referred to by the MEA in this instance is the Vienna Convention on Diplomatic Relations (1961), which provides a complete framework for the establishment, maintenance and termination of diplomatic relations on a basis of consent between independent sovereign States.

About Vienna Convention on Diplomatic Relations (1961)

- Most notably, the Convention codifies the longstanding custom of diplomatic immunity, in which diplomatic missions are granted privileges that enable diplomats to perform their functions without fear of coercion or harassment by the host country.
- It affirms the concept of “inviolability” of a diplomatic mission, which has been one of the enduring cornerstones of international diplomacy.
- The Vienna Convention on Diplomatic Relations entered into force on April 24, 1964 and is nearly universally ratified, with Palau and South Sudan being the exceptions.
- As per the Vienna Convention, a “receiving State” refers to the host nation where a diplomatic mission is located.
- In this case, the host nation is the UK and as per the Vienna Convention, it has some basic obligations towards the diplomatic missions it hosts on its sovereign territory.
- Article 22 of the Convention deals with obligations with regards to the premises of the Mission.
- Part 2 of this article states that “The receiving State is under a special duty to take all appropriate steps to protect the premises of the mission against any intrusion or damage and to prevent any disturbance of the peace of the mission or impairment of its dignity”.
- Basically, the security of any High Commission or Embassy is the responsibility of the host nation.
- While diplomatic missions can also employ their own security, ultimately, the host nation is accountable for security.



Nepal-India Literature Festival

Why in News

Nepal-India Literature Festival concludes with adoption of 10-point Biratnagar declaration.

Important Points

- The festival was jointly organized by Biratnagar Metropolitan City and Krantidhara Literature Academy of Meerut, India.
- A 10-point declaration highlighting the mutual promotion of literature between Nepal and India was adopted.
- Over 200 litterateurs cited their literary creations on the occasion, which included poetry, short stories, and novels.
- The festival provided a platform for literary writers of Nepal and India to showcase their work and exchange ideas.
- The participation of young literary writers was particularly encouraging.
- The festival provided them with an opportunity to interact with established writers and gain valuable insights into the craft of writing.

10-Point Biratnagar Declaration

- The Biratnagar declaration highlighted the need for mutual promotion of literature between Nepal and India. The declaration included the following points:
 - Translation of Nepali literature into Hindi and Hindi into Nepali for mutual promotion.
 - Further research on connecting Mahabharat-era King Birat's palace with the Mahabharat Circuit in coordination with the Department of Archaeology and historians.
 - Encouraging young literary writers to explore the archaeological artefacts further.
 - Creating an online platform for literary writers of Nepal and India to share their work.
 - Establishing literary exchange programs for students of Nepal and India.
 - Encouraging literary writers to promote tourism in both Nepal and India through their work.
 - Recognizing the contribution of literary writers in promoting cultural ties between Nepal and India.
 - Creating a database of literary works of Nepal and India for research purposes.
 - Encouraging literary writers to address social issues in their work.
 - Organizing the Nepal-India Literature Festival annually.
- The adoption of the Biratnagar declaration is a significant step towards promoting literature between the two neighboring countries. The declaration recognizes the importance of literature in promoting cultural ties and encourages the exchange of ideas and knowledge through literature.



India-Japan

Why in News

Japan's new plan for a free and open Indo-Pacific

Important Points

- o Japan's PM Kishida unveiled the Japanese plan for a Free and Open Indo-Pacific (FOIP) in concrete terms while delivering his speech entitled "The Future of the Indo-Pacific-Japan's New Plan for a 'Free and Open Indo-Pacific-Together with India, as an Indispensable Partner'" at the Indian Council of World Affairs (ICWA).

The salient points made in the speech are:

1. First, at the outset, he explained that the concept of FOIP had become more important than ever before for enhancing cooperation in the world community rather than toward division and confrontation, especially when the international order is getting fractured.
2. Second, he underlined that the core principles of the FOIP like defending freedom and rule of law and respecting diversity, inclusiveness, and openness, remained relevant in the current environment.

- On his approach toward the FOIP, he emphasised “rulemaking through dialogue,” “equal partnership” among countries, and focusing on “people.”
- He rightly observed that at a time when the paradigm in international relations was changing, there was no consensus on an acceptable new world order that could best protect the interests of stakeholders.
- 3. Third, he announced the “new” four pillars of FOIP. The first pillar, the principles for peace and rules for prosperity, is the backbone of Japan’s FOIP.
 - It includes respect for sovereignty and territorial integrity and opposition to unilateral changes to the status quo by force.
 - He expressed that the centrality of a free, fair, and just economic order was essential, while emphasising the need for further liberalisation.
- Addressing challenges in an Indo-Pacific way, constitutes the second pillar.
- This pillar emphasises cooperation to face increasing challenges to global commons such as climate and the environment, global health, and cyberspace in addition to dealing with the fundamental challenge of defending peace.
- While assuring increased cooperation of Japan in these areas, he pointed out that Japan decided to provide 50 million US dollars in emergency food aid to support vulnerable countries in Asia, the Middle East, and Africa, as well as corn seeds and other assistance to vulnerable farmers in Ukraine.
- Crucially, he highlighted that “proliferation of disinformation is a common challenge in all countries that hinders people’s political self-determination and threatens the autonomy of nations.”
- The multi-layered connectivity is the third pillar, which is the core element of cooperation for FOIP. It is considered important for economic growth.
- He indicated that Japan would focus on three regions. The first area is Southeast Asia. He remarked that the ASEAN Outlook for Indo-Pacific and Japan’s FOIP have similarities.
- Kishida assured that Japan will make a new contribution of 100 million US dollars to the Japan-ASEAN Integration Fund. The second area is South Asia with special focus on Northeast India.
- He stated that Japan will promote the Bay of Bengal-Northeast India industrial value chain concept in cooperation with India and Bangladesh to foster the growth of the region.
- The third area is the Pacific Islands region, which is far from the Indian Ocean. Japan will continue to support the countries in this region.
- The fourth pillar is “extending efforts for security and safe use of the sea to the air.” The aim is to free the oceans from the growing geopolitical risks.
- In this, Japan places importance on the fact that states should clarify their claims based on international law, no use of force or coercion, and settlement of disputes by peaceful means.
- Japan assured help to strengthen the maritime law enforcement capabilities of each country through human resource development, strengthening cooperation among coast guard agencies, and joint training with the coast guards of other countries.
- Kishida committed to strengthen diplomatic efforts to implement an optimal combination of various methods and to introduce a new framework for “private capital mobilization-type” grant aid that will attract investments.
- This is aimed at supporting start-ups by motivated young people in each country in the region.
- Japan will mobilize a total of more than 75 billion US dollars in public and private funds, through private investments, yen loans and other means, in the Indo-Pacific region by 2030 in infrastructure, for which there are major demands from each country.
- Japan’s concept of FOIP is like India’s concept of Indo-Pacific Oceans Initiative (IPOI), which has seven pillars: Maritime Security; Maritime Ecology; Maritime Resources; Capacity Building and Resource Sharing; Disaster Risk Reduction and Management; Science, Technology and Academic Cooperation; and Trade Connectivity and Maritime Transport. Broadly, both cover the same fields.
- Both aim at economic growth of the region with a rule-based order governing the region.
- Japan has also assured investment for infrastructure development. The centrality of ASEAN is common in both concepts.



Uganda makes it a crime to identify as LGBTQ

Why in News

Uganda's parliament passed a Bill recently making it illegal to identify as an LGBTQ person, going several steps ahead of neighbouring countries in the African continent which outlaw same-sex relationships and marriages.

Important Points

- The new law, if passed, will be the first to outlaw merely identifying as lesbian, gay, bisexual, transgender and queer (LGBTQ).
- In addition to same-sex intercourse, the law bans “promoting and abetting” homosexuality as well as “conspiracy to engage in homosexuality”.
- Violations under the law draw severe penalties, including death for so-called aggravated homosexuality and life in prison for gay sex.
- Aggravated homosexuality involves gay sex with people under the age of 18 or when the perpetrator is HIV positive, among other categories, according to the law.

Status of LGBTQ rights in Africa

- More than 30 of Africa's 54 countries, including Uganda, already ban homosexuality.
- Additionally, of the 69 countries that have laws criminalising homosexuality, nearly half are in Africa.
- Angola in February 2023 brought into effect revised penal code to allow same-sex relationships and banned discrimination on the basis of sexual orientation.
- Gabon reversed a law that had criminalised homosexuality and made gay sex punishable with six months of imprisonment.
- Meanwhile, Botswana's High Court ruled in favour of decriminalising homosexuality in 2019 and
- Mozambique and the Seychelles scrapped anti-homosexuality laws.
- A Trinidad and Tobago court ruled that laws banning gay sex were unconstitutional.

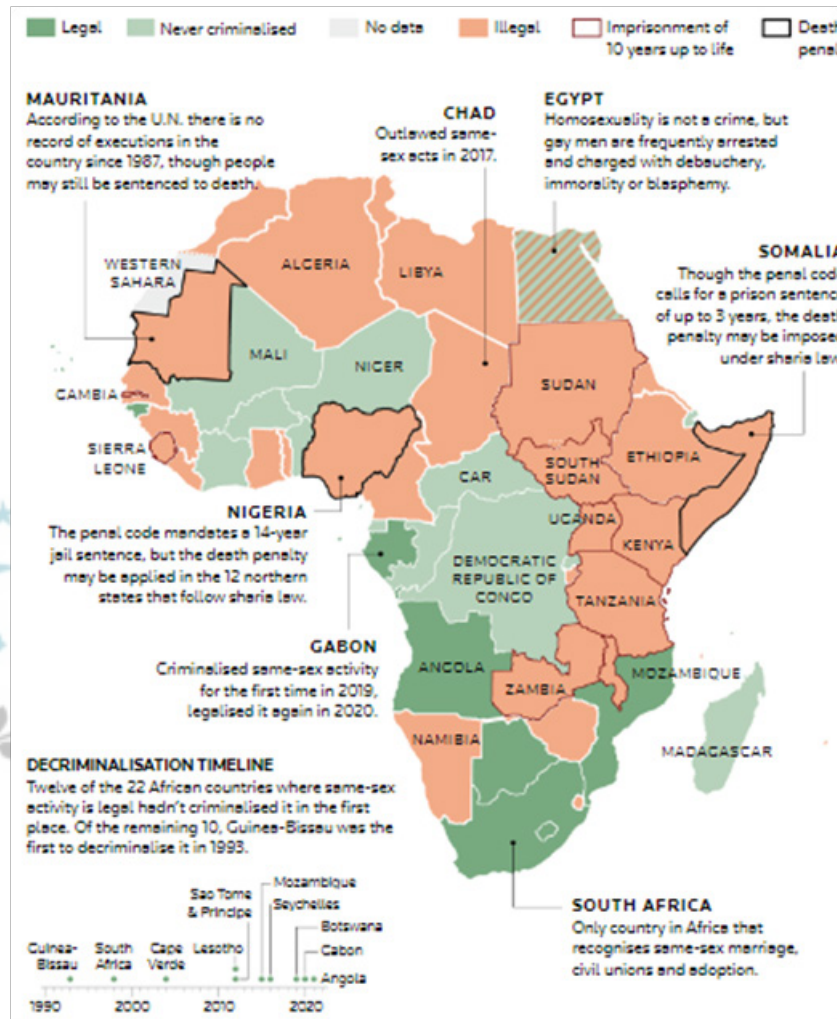
Status of LGBTQ rights in India

- The Supreme Court recently referred to a five-judge Constitution Bench the petitions seeking legal recognition to same-sex marriages, saying the matter raises questions of “seminal importance”.
- In its order, a three-judge bench, headed by Chief Justice D Y Chandrachud, said the submissions on the issue involve the interplay between constitutional rights and specific legislative enactments, including the Special Marriage Act, besides the rights of transgender couples.
- In 2018, the Supreme Court had repealed Section 377 of the Indian Penal Code (IPC), which criminalises homosexuality.
- However, there is no legal approval for adoption of children by same-sex couples and blood donation by LGBTQ people is banned.

Status of LGBTQ rights in rest of the world

- According to Pew Research Center, 62 countries criminalise consensual same-sex acts by law, while 129 countries don't criminalise them.
- Only 28 countries in the world recognise same-sex marriages, and 34 others provide for some partnership recognition for same-sex couples, according to International Lesbian, Gay, Bisexual, Trans and Intersex Association (ILGA).
- Death penalty is the legally prescribed punishment for homosexual acts in Brunei, Iran, Mauritania, Saudi Arabia and Yemen.
- In the US, more than 450 anti-LGBTQ Bills have been introduced in various states, said White House spokesperson Karine Jean-Pierre, who pointed to a proposed Florida Bill that would give the state the right to separate transgender children from their parents.
- Homosexual activity is legal in all 27 member states of the European Union, and in Central America.
- All but five nations in the Caribbean and Guyana in South America also legally allow same-sex consensual activity.
- Iraq is one of three Arab-majority countries in the Middle East that doesn't explicitly criminalize same-sex relationships. The others are Jordan and Bahrain.

- However, the region largely remains opposed to the idea of homosexuality, which is evident in instances like Saudi government's campaign to remove rainbow-colored toys from shelves, a state clampdown and threats from a militant Christian group directed at LGBTQ communities in Lebanon, and a hashtag campaign that originated in Egypt recently that uses "fetrah," the Arabic word for "instinct," to insist that there can only be two genders.
- In the Asian subcontinent, Afghanistan is the only country that has a death penalty in force for homosexuality, but strict punishments are awarded in Bangladesh, Maldives, Sri Lanka, Myanmar, Malaysia and Brunei.
- On the brighter side, Singapore repealed a law that criminalised sex between men, while Vietnam declared that conversion therapy would be banned.



New Global Greenhouse Gas Monitoring Infrastructure

Why in News

The U.N.'s World Meteorological Organisation has come up with a new Global Greenhouse Gas Monitoring Infrastructure.

Important Points

About Global Greenhouse Gas Monitoring Infrastructure

- It aims to provide better ways of measuring planet-warming pollution and help inform policy choices.
- It will integrate space-based and surface-based observing systems, and seek to clarify uncertainties about where greenhouse gas emissions end up.
- It should result in much faster and sharper data on how the planet's atmosphere is changing.
- It will fill critical information gaps and support action to reduce heat-trapping gases which are fuelling temperature increase.
- It seeks to build on WMO's experience in coordination international collaboration in weather prediction and climate analysis and on long-standing activities in greenhouse gas monitoring, research and provision of related services under the auspices of the Global Atmosphere Watch established in 1989 and its Integrated Global Greenhouse Gas Information System (IG3IS).
- Currently, most GHG monitoring undertaken globally relies heavily on research capabilities and research funding.

What is Global Atmosphere Watch(GAW) programme?

- WMO's GAW programme focuses on building a single coordinated global understanding of atmospheric composition, its change, and helps to improve the understanding of interactions between the atmosphere, the oceans and the biosphere.
- It coordinates high-quality atmospheric composition observations across global to local scales to drive high-quality and impact science while co-producing a new generation of research enabled products and services.
- About 100 countries are participating in the GAW Programme.
- Some components of the GAW observational network are recognized as comprehensive and baseline networks of the Global Climate Observing System (GCOS).
- The GAW Programme operates according to the GAW Implementation Plan 2016-2023.
- One major aspect of the GAW mission is to organize, participate in and coordinate assessments of the chemical composition of the atmosphere on a global scale.

Price Day Ahead Market and Surplus Power Portal (PUSHP)

Why in News

The Central Government has launched a High Price Day Ahead Market and Surplus Power Portal (PUSHP) – an initiative to ensure greater availability of power during the peak demand season.

Important Points

The surplus power portal

- It is a one-of-its-kind initiative, reflecting the ingenuity of the Ministry of Power and the Regulator. Distribution Companies have tied up long term PPAs for power supply.
- They have to pay fixed charges even when they do not schedule the power. Now the DISCOMs will be able to indicate their surplus power in block times / days / months on portal.
- Those DISCOMs who need power will be able to requisition the surplus power. The new buyer will pay both variable charge (VC) and fixed cost (FC) as determined by Regulators.

- Once power is reassigned, the original beneficiary shall have no right to recall as entire FC liability is also shifted to the new beneficiary.
- Financial liability of new buyer shall be limited to quantum of temporary allocated / transferred power. This will reduce the fixed cost burden on the DISCOMs, and will also enable all the available generation capacity to be utilized.



What is Day-Ahead-Market (DAM)?

- It is a physical electricity trading market for deliveries for any/some/all 15 minute time blocks in 24 hours of next day starting from midnight.
- The prices and quantum of electricity to be traded are determined through a double sided closed auction bidding process.

High Price Day Ahead Market (HP DAM)

- In 2022, the Ministry of Power after taking note of the fact that on some days the prices in the electricity exchange had gone upto Rs.20, had given directions to the CERC to put a price cap of Rs.12 on the exchange, so that there is no profiteering.
- The cap was imposed from April 2022 in Day Ahead Market & Real Time Market, and further in all segments from May 2022. This move rationalized the price for buyers.
- Because of the high prices of gas in the international market; the electricity made by using gas was expensive – more than Rs.12 per unit – and this capacity could not be sold on the market.
- Similarly, the imported coal-based plants and the Renewable Energy stored in battery-energy storage systems could not be brought into operation, as their generation cost was high.
- In 2023 it is expected that the demand will be much higher than last year therefore, the gas-based plants and the imported coal-based plants will need to be scheduled – and that is why a separate segment has been carved out for those generation systems. This separate segment is called HP DAM.
- The HP—DAM was part of the overall strategy to ensure that all available power capacity is utilized for supply the power to consumers.

PM Vishwakarma Kaushal Samman (PM VIKAS)

Why in News

The Prime Minister of India addressed a Post Budget Webinar on the subject of 'PM Vishwakarma Kaushal Samman'.

Important Points

PM VIKAS scheme

- The scheme will enable traditional artisans and craftspeople to improve the quality, scale and reach of their products, integrating them with the MSME value chain.
- It was announced by the central government on 1 February 2023.
- It aims to increase the potential of thousands of craftspeople and artists around the nation by providing technology, skills training, and the opening of credit lines.
- The components of the scheme will include not only financial support but also access to advanced skill training, knowledge of modern digital techniques and efficient green technologies, brand promotion, linkage with local and global markets, digital payments and social security.
- It will greatly benefit the Scheduled Castes, Scheduled Tribes, OBCs, women and people belonging to the weaker sections.



Research, Education and Training Outreach (REACHOUT) for capacity building

Why in News

The Union Minister of Earth Science said that an umbrella scheme Research, Education and Training Outreach (REACHOUT) is being implemented by the Ministry of Earth Sciences for capacity building.

Important Points

It consists of the following sub-schemes:

- R&D in Earth System Science (RDESS).
- International Training Centre for Operational Oceanography (ITCOcean).
- Program for Development of Skilled manpower in Earth System Sciences (DESK).
- Outreach and awareness.
- Knowledge Resources Center Network (KRCNet).
- BIMSTEC Centre for Weather and Climate (BCWC).

The main objectives of the above sub-schemes are:

- Supporting various R &D activities in the thrust areas of different components of Earth System Sciences that are theme and need based and that would help in attaining the National goals set up for MoES.
- Develop useful collaborations with international organizations for mutual transfer of advanced knowledge in science and technology in Earth Sciences and to provide services to developing countries.
- Develop skilled and trained manpower in Earth Sciences with the support of academic institutions in the country and abroad.

Ministry of Earth Sciences
Government of India

Why in News?

- Recently, the Union Minister of Earth Sciences said that an umbrella scheme Research, Education & Training Outreach (REACHOUT) is being implemented by the Ministry of Earth Sciences for capacity building.

About the REACHOUT scheme:

- It consists of the following six sub-schemes:
 1. Research and Development in Earth System Science (RDESS).
 2. Outreach and awareness.
 3. Knowledge Resources Center Network (KRCNet).
 4. BIMSTEC Centre for Weather and Climate (BCWC).
 5. International Training Centre for Operational Oceanography (ITCOcean).
 6. Program for development of skilled workforce in Earth system sciences (DESK).
- Of the sub-schemes mentioned above, the first three sub-schemes are implemented by the MoES headquarters.
- The remaining three schemes namely BCWC, ITCOcean and DESK are implemented by MoES institutes namely National Centre for Medium-Range Weather Forecasting (NCMRWF), Indian National Centre for Ocean Information Services (INCOIS) and Indian Institute of Tropical Meteorology (IITM).
- These sub-schemes aim to nurture research (including national and international collaboration); provide training on atmospheric science and oceanography to participants from India and neighbouring countries, and to generate awareness about various facets of Earth system science amongst students, academicians and the public.

Objectives:

- To support various R&D activities in the thrust areas of different components of Earth system sciences that are theme and need-based, and that would help in attaining the National goals set up for MoES.
- Develop useful collaborations with international organisations for mutual transfer of advanced knowledge in science and technology in Earth sciences and to provide services to developing countries.
- Develop a skilled and trained workforce in Earth sciences with the support of academic institutions in the country and abroad.

Ministry of Earth Sciences
Government of India
Phone: 011-26109509 | Email: info@moes.gov.in

Unnathi programme launched during silver jubilee of Kudumbashree

Why in News

President of India has inaugurated the silver jubilee celebration of 'Kudumbashree' and also launched 'Unnathi', an umbrella programme.

Important Points

- 'Unnathi' is an umbrella programme to create opportunities for employment among the youth belonging to SC and ST communities.

Kudumbashree

- Kudumbashree is the poverty eradication and women empowerment programme implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala.
- The name Kudumbashree in Malayalam language means 'prosperity of the family'.
- The name represents 'Kudumbashree Mission' or SPEM as well as the Kudumbashree Community Network.
- What is commonly referred to as 'Kudumbashree' could mean either the Kudumbashree Community Network, or the Kudumbashree Mission, or both.
- It was set up in 1997 following the recommendations of a three member Task Force appointed by the State government.
- Its formation was in the context of the devolution of powers to the Panchayat Raj Institutions (PRIs) in Kerala, and the Peoples' Plan Campaign, which attempted to draw up the Ninth Plan of the local governments from below through the PRIs.
- Kudumbashree has a three-tier structure for its women community network,
 - Neighbourhood Groups (NHGs) at the lowest level.
 - Area Development Societies (ADS) at the middle level, and
 - Community Development Societies (CDS) at the local government level.
- The community structure that Kudumbashree accepted is the one that evolved from the experiments in Alappuzha Municipality and Malappuram in early 1990s.

- In 2011, the Ministry of Rural Development (MoRD), Government of India recognised Kudumbashree as the State Rural Livelihoods Mission (SRLM) under the National Rural Livelihoods Mission (NRLM).
- It is arguably one of the largest women's networks in the world.
- While the community network is formed around the central themes of poverty eradication and women empowerment, its main features include democratic leadership, and support structures formed from the 'Kudumbashree family'.
- The Kudumbashree that began as a poverty alleviation mission had become a women empowerment model known around the world.
- A large number of women representatives in local bodies had entered public life through their involvement in Kudumbashree.



Jharniyojan portal of Jharkhand

Why in News

Moving closer towards its promise to ensure 75 per cent employment to local candidates in the state's private sector, the Jharkhand government has recently launched 'Jharniyojan' portal.

Important Points

- In 2022, the Supreme Court has set aside (or lifted) a stay order that was placed by the Punjab and Haryana High Court on the law that reserved 75% of private jobs for the residents of the Haryana.
- According to the Haryana State Employment of Local Candidates Act, 2020, 75% of the jobs in the private sector will be given to the residents of Haryana.

About the portal

- The portal will act as a platform for the employers to share businesses and manpower-related information and for the candidates looking for jobs.
- According to the government, all private establishments have to register themselves.
- The employers who make use of the portal will have to adhere to the 'Jharkhand State Employment of Local Candidates in Private Sector Act, 2021'.
- "Although there is a provision of punishment under the Act, local companies and employers are expected to voluntarily comply with it and provide employment opportunities to local youth/women.
- The government said a provision has also been made to set up a committee headed by the Principal Secretary, Labour, Employment, Training and Skill Development Department to monitor compliance of the Act/Rules.
- The 'Jharkhand State Employment of Local Candidates in Private Sector Act, 2021' was passed with the objective to provide employment opportunities to the unemployed youth of the state at the local level.
- In 2022, the rules related to the implementation of the Act were notified. As per the Act, 75% of jobs in private sectors with salaries up to Rs 40,000 are to be reserved for "locals" in the state.
- It applies to all establishments which are in the private sector and where 10 or more people are employed.
- If the local companies have problems in getting skilled manpower at the local level, then provision has been made under the Act to provide necessary training to eligible youth, the release said.
- The government has specified that Central or state government undertakings will not be included in the Act.
- However, the provisions of the Act will be applicable to all the organisations outsourcing services to the establishments/undertakings of the central government or the state government.



Porter Prize 2023

Why in News

The Union Ministry of Health & Family Welfare has been bestowed with Porter Prize 2023 by the Institute for Competitiveness (IFC) and Stanford University.

Important Points

- The Ministry of Health and Family Welfare (MoHFW), took several measures to improve the health infrastructure in the country.
- Further, it played a significant role, especially in Covid management with initiatives like last-mile Covid-19 vaccination coverage along with recognizing efforts in health sector.
- The prize recognizes the strategy followed by the Government of India in managing COVID-19, the approach, and involvement of various stakeholders, especially the involvement of ASHA workers in the industry to create PPE Kits.
- According to experts, the strategies followed by India in its COVID management has been very successful, which were based on three cornerstones– containment, relief package, and vaccine administration.

About the prize

- It has been named after Michael E. Porter, an economist, researcher, author, advisor, speaker and teacher.
- He has brought economic theory and strategy concepts to bear on many of the most .
- He has brought economic theory and strategy concepts to bear on many of the most challenging problems facing corporations, economies and societies, including market competition and company strategy, economic development, environment and healthcare.
- His research has received numerous awards and he is the most cited scholar today in economics and business.
- The prize was announced at The India Dialog, organized by Institute for Competitiveness (IFC) and US Asia Technology Management Center (USATMC) at Stanford University
- The theme of the conference was “The Indian Economy 2023: Innovation, Competitiveness and Social Progress”.



Dr Mansukh Mandaviya
@mansukhmandviya · Follow



In a significant achievement towards recognizing efforts in health sector, @MoHFW_India conferred with prestigious Porter Prize 2023.

Prize recognizes the holistic strategy followed by India in control & containment of COVID-19, under PM @NarendraModi Ji's dynamic leadership.

One Nation One Challan

Why in News

Gujarat government is setting up virtual courts under One Nation, One Challan initiative.

Important Points

What is the One Nation, One Challan initiative?

- One Nation, One Challan is an initiative of the Ministry of Road Transport and Highways to bring all related agencies, such as the traffic police and the Regional Transport Office (RTO), on one platform, to enable seamless collection of challans as well as data transfer.
- The integrated system involves detection of traffic violations through the CCTV network and getting the registration number of the erring vehicle from applications like VAHAN (detecting the vehicle's ownership details) and SARATHI (compilation of driving licenses).
- An e-challan is then generated with the relevant penalty amount, and sent to the mobile number linked with the vehicle.

- In Gujarat, the initiative is operational in three commissionerate areas of Ahmedabad, Rajkot and Surat since January 16, 2023 and implementation at Vadodara is underway.

How does it work?

- So far, to penalise someone from a different state using the CCTV network, we were unable to find details of the vehicle ownership, as the database was not integrated.
- Now, with the integration of all the states' RTO data and traffic police data with the support of National Informatics Centre (NIC) servers, if someone coming from other state is captured violating traffic regulations on CCTV, the vehicle's registration number and its related data can be accessed by the Ahmedabad police, and the challan will be sent directly to the mobile number mentioned at the time of the vehicle's registration.
- Also, e-challans so far are delivered through mobile phone SMSes, or through post when the phone number is not available. But now, the NIC is set to launch its own application for this.
- If someone doesn't pay the challan amount within 90 days, the challan will be automatically forwarded to a virtual court and proceedings will be initiated.
- Summons will be sent on the mobile phone of the offender. If the fine is still not paid, further legal proceedings will follow.
- Virtual courts are aimed at eliminating the presence of litigants in the court. An accused can search their case on the virtual court's website. Upon successful payment of fine, the case will be shown as disposed of.
- For now, one court is in the process of being designated as a virtual court for the whole of Gujarat — court number 16 of Ahmedabad city sessions court, which will deal dedicatedly with the 'One Nation, One Challan' cases.
- Gradually, more jurisdictional courts may be added.

Whiskey fungus

Why in News

A local court in the USA has recently stopped the construction of a new barrel warehouse for Jack Daniel's, the world's biggest-selling brand of American whiskey as whiskey fungus has spread uncontrollably.

Important Points

What is Whiskey fungus?

- When whiskey or any other spirit is kept inside a cask for maturing, a small amount of it evaporates into the atmosphere through the wood. Up to two per cent of the alcohol leaves the cask this way every year.
- This whiskey that evaporates into the air and perfumes the storehouse was dubbed the angel's share in mediaeval Ireland and Scotland.
- They believed the whiskey that disappeared into the air was meant as an offering for the angels.
- Whiskey fungus, or *Baudoinia compniacensis*, feeds on these alcoholic vapours and is velvety or crust-like — it can reach one or two centimetres in thickness.
- The fungus tends to spread to nearby surfaces, blanketing almost everything that comes in its way.
- It is found across North America, Europe and Asia and thrives where fermentation occurs, like in bakeries and distilleries.
- *Baudoinia compniacensis* uses the ethanolic vapour to initiate germination and to express proteins in the fungus that allow the fungus to tolerate high temperatures.
- It was first discovered in the 1870s, when Antonin Baudoin, the director of the French Distillers' Association, saw a "plague of soot" around the distilleries in the Cognac region of France.
- Researchers haven't found any instances of health risks from short or long-term exposure to the whiskey fungus yet. However, it can destroy trees and damage properties.
- Moreover, removing the fungus from the affected surfaces might prove to be a daunting task.



Country Reports on Terrorism 2021: India

Why in News

The US Bureau of Counterterrorism published Country Reports on Terrorism 2021: India recently.

Important Points

- According to this report, India has made significant efforts to detect, disrupt, and degrade operations of terrorist organisations.
- As per this report, Lashkar-e-Taiba, Jaish-e-Muhammad, Hizbul Mujahideen, ISIS, al-Qaeda, Jamaat-ul-Mujahideen and Jamaat-ul-Mujahideen Bangladesh, are the terrorist groups active in India.
- The report said that a shift was observed in terrorists' tactics in 2021 with attacks on civilians and greater reliance on IEDs (improvised explosive devices), including an explosive attack using drones on an air force base.
- The report said India responds promptly to US requests for information related to terrorism investigations and makes efforts to mitigate threats in response to US information.
- It noted that India implemented the UNSCR 2396 (United Nations Security Council resolution 2396 to contain international terrorism) by using watch lists, implementing biographic and biometric screening at ports of entry, and prioritising information sharing.
- India is a member of global money laundering and terrorist financing watchdog FATF (Financial Action Task Force), the Asia/Pacific Group on Money Laundering, and the Eurasian Group.
- The country's Financial Intelligence Unit-India is part of the Egmont Group, an international organisation facilitating intelligence sharing between national financial intelligence units to check money laundering and terrorist financing).
- The report says that Pakistan has made meagre progress in its pledge to dismantle all terrorist organisations without delay or discrimination.
- Pakistan experienced significant terrorist activity in 2021, resulting in a higher number of attacks and casualties compared to 2020.
- Major terrorist groups that focused on conducting attacks in Pak include Tehreek-e-Taliban Pakistan, Balochistan Liberation Army and ISIS-K.
- In 2021, members of religious minorities in Pakistan faced significant threats from terrorist groups.
- UNSCR 2396 required states to have systems to develop watchlists of known or suspected terrorists, to require airlines to provide advance passenger information (API) to the appropriate national authorities, and to develop the capacity to use passenger name records (PNR).



Hasdeo movement

Why in News

Centre for Policy Research (CPR) was recently in news for the suspension of its FCRA registration. Among the ineligible activities listed by the I-T Department is the CPR being involved in the Hasdeo movement.

Important Points

- It is a movement launched by activists against coal mining in the Hasdeo forests of Chhattisgarh.
- Hasdeo Aranya is a biodiversity-rich forest which also happens to be a rich source of coal.
- For months in 2022, tribals and activists had protested against the operation of three coal mines in the region: the Parsa East Kente Basan (PEKB), Parsa, and Kente extension.

Hasdeo forests

- A sprawling forest in the northern part of Chhattisgarh, Hasdeo Aranya is known for its biodiversity.
- The forest falls under Korba, Sujapur and Sarguja districts, with a sizeable tribal population.



- The Hasdeo river, a tributary of Mahanadi, flows through it.
- It is home to Adivasis from Gond, Lohar, Oraon, and other parts of India, who live on 1,70,000 hectares of land rich in biodiversity.
- The Hasdeo forests are also the catchment area for the Hasdeo Bango Dam built across the Hasdeo river which irrigates six lakh acres of land, crucial to a State with paddy as its main crop.
- Besides, the forests are ecologically sensitive due to the rich biodiversity they offer and due to the presence of a large migratory corridor for elephants.
- Hasdeo represents one of the largest coal reserves in India, having estimated reserves of 5.18 billion tonnes of coal.
- There are more than 20 known coal mines on the Hasdeo reserve.
- After a joint study in 2010, the Ministry of Coal and the Ministry of Forest and Environment deemed the Hasdeo reserve a 'No Go Area,' prohibiting any sort of mining due to its rich biodiversity and exceptional ecology.
- In 2021, a report on the region by the Indian Council of Forestry Research and Education (ICFRE), an autonomous organisation under the Ministry of Environment, Forest & Climate Change, termed Hasdeo Aranya the "largest un-fragmented forests in Central India consisting of pristine Sal (*Shorea robusta*) and teak forests."
- The Hasdeo Aranya Coal Field (HACF), meanwhile, is spread over nearly 1,880 sqkm and comprises 23 coal blocks.

Global Terrorism Index(GTI)

Why in News

Sydney-headquartered think-tank Institute for Economics & Peace (IEP) has published GTI recently.

Important Points

- The GTI report is produced by the Institute for Economics & Peace (IEP) using data from TerrorismTracker and other sources.
- TerrorismTracker provides event records on terrorist attacks since 1 January 2007. The dataset contains almost 66,000 terrorist incidents for the period 2007 to 2022.
- According to the tenth Global Terrorism Index (GTI) report Afghanistan remains the country most impacted by terrorism for the fourth consecutive year, despite attacks and deaths falling by 75 per cent and 58 per cent, respectively.
- GTI reported that the Islamic State-Khorasan (Daesh) has emerged as "the most active terrorist group" in Afghanistan.
- However, the report stressed that it does not include acts of state repression and violence by state actors and, as such, acts committed by the Taliban are no longer included in the scope of the report since they took control of the government.
- Globally, deaths from terrorism fell by nine per cent to 6,701 deaths, marking a 38 per cent decrease from its peak in 2015.
- The fall in deaths was mirrored by a reduction in the number of incidents. However, if Afghanistan was removed from the index, terrorism deaths would have increased by four per cent.
- Another stagnant trend showed that South Asia remains the region with the worst average GTI score.
- The region recorded 1,354 deaths from terrorism in 2022, a decrease of 30 per cent when compared to the previous year; however, if the improvement in Afghanistan was excluded, then terrorism deaths would have increased by 71 per cent.
- Pakistan saw a significant increase in terror-related deaths, logging a 120 per cent increase from the previous year.
- Afghanistan and Pakistan remain amongst the ten countries most affected by terrorism in 2022.
- The Balochistan Liberation Army (BLA) were responsible for a third of these deaths in Pakistan, a ninefold increase from the prior year, making it the fastest growing terrorist group in the world.
- The deadliest terrorist groups in the world in 2022 were Islamic State (IS) and its affiliates, followed by al-Shabaab, Balochistan Liberation Army (BLA) and Jamaat Nusrat Al-Islam wal Muslimeen (JNIM).
- It added that IS remained the deadliest terror group globally for the eighth consecutive year, recording the most attacks and deaths of any group in 2022.
- Despite this, terrorism deaths attributed to IS and its affiliate groups, Islamic State – Khorasan Province (ISK), Islamic State – Sinai Province (ISS) and Islamic State West Africa (ISWA), declined by 16 per cent.
- The Institute for Economics and Peace (IEP) has corrected the report related to GTI 2023 after the Communist Party of India (CPI) was wrongly included in the list of deadliest terror groups of 2022.

India's ranking

- India ranked 13th on the index, marking only a marginal decrease from the previous year.
- In spite of being among the 25 worst-hit nations on the index, Indian respondents desisted from selecting war and terrorism as the biggest threat to their daily safety.

The Institute for Economics and Peace

- It is a global think tank headquartered in Sydney, Australia with branches in New York City, Mexico City and Oxford.
- IEP studies the relationship between peace, business, and prosperity, and seeks to promote understanding of the cultural, economic, and political factors that drive peacefulness.
- It is a registered Australian charity and works in partnership with the Aspen Institute, Economists for Peace and Security the United Nations Global Compact, Center for Strategic and International Studies and Cranfield University.
- It also collaborates with the Organisation for Economic Co-operation and Development, the Commonwealth Secretariat, UNDP and UN Peacebuilding Support Office.



Low-Temperature Thermal Desalination (LTTD) technology

Why in News

Chennai based National Institute of Ocean Technology(NIOT) is planning to set up green, self-powered desalination plant in Lakshadweep.

Important Points

- Stepping up from its ongoing initiative of providing potable water in six islands of Lakshadweep using Low Temperature Thermal Desalination (LTTD) technology, the Chennai-based NIOT is working at making this process free of emissions.
- Currently the desalination plants, each of which provides at least 100,000 litres of potable water everyday, are powered by diesel generator sets — there being no other source of power in the islands.
- LTTD exploits the difference in temperature (nearly 15°C) in ocean water at the surface and at depths of about 600 feet.
- This cold water condenses water at the surface, that is warmer but whose pressure has been lowered using vacuum pumps.
- Such de-pressurised water can evaporate even at ambient temperatures and this resulting vapour when condensed is free of salts and contaminants and fit to consume.
- However, the need for diesel power to reduce the water pressure means that the process is not fossil-fuel free and also consumes diesel, a precious commodity in the islands that has to be shipped from the mainland critical for powering the electric grid.
- For the first time in the world, probably, we are setting up a [desalination] plant that will also supply power to the plant.
- Currently there were five desalination plants in operation in the Lakshadweep islands.
- Four more were expected to be functioning in the coming months.
- The proposed self-sustaining plant the 10th and is expected to be ready by end of 2023.

About NIOT

- The NIOT, an institute under the aegis of the Ministry of Earth Sciences (MoES), has worked for years on harnessing energy from the ocean.
- It was established in November 1993 as an autonomous society under the Ministry of Earth Sciences in India. NIOT is managed by a Governing Council and is headed by a director.
- The major aim of starting NIOT was to develop reliable indigenous technologies to solve various engineering problems associated with harvesting of non-living and living resources in India's exclusive economic zone, which is about two-thirds of the land area of India.

Existence of Zealandia confirmed

Why in News

After 375 years of speculation and exploration, scientists have finally confirmed the existence of a “missing” continent known as Zealandia.

Important Points

- Zealandia which is approximately 1.89 million square miles in size, was once part of an ancient supercontinent called Gondwana, which also included Western Antarctica and Eastern Australia over 500 million years ago.
- However, it began to “pull away” from Gondwana for reasons that geologists are still trying to understand roughly 105 million years ago.
- As it did so, it gradually sank beneath the waves, with over 94% of the landmass remaining underwater for millennia.
- It is called as Te Riu-a-Māui in the Māori language (It is an Eastern Polynesian language spoken by the Māori people, the indigenous population of mainland New Zealand).
- The existence of Zealandia was first recorded in 1642 by Dutch businessman and sailor Abel Tasman, who was on a mission to find the “great Southern Continent” or Terra Australis.
- In 2017, GNS geologists finally confirmed the existence of Zealandia, which had been hiding in plain sight all along.
- The vast majority of this “new” continent is located underwater, lying beneath 6,560 feet (2km) of water.
- Zealandia is now recognized as the world’s eighth continent, but its unique characteristics make it stand out from the other continents on the planet.
- Every other continent is home to multiple countries, while Zealandia has only three territories.
- Despite its underwater location, Zealandia is an important discovery that sheds light on the earth’s geological history and the forces that shaped the planet as we know it today.



C-Veda project

Why in News

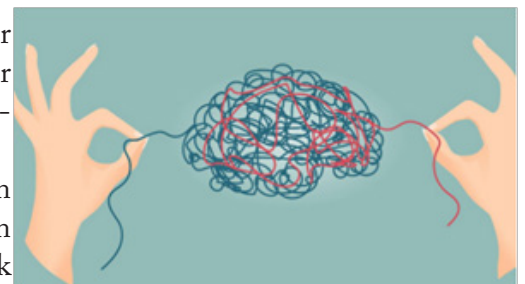
News study is going on to find out how the brain develops as we grow under the ‘Consortium on Vulnerability to Externalizing Disorders and Addictions’ (C-Veda) project.

Important Points

- It is one of the largest studies of its kind, spanning nearly 9,000 children and young adults from India.
- It aims to follow up those tested over decades, evaluate the effect of biological and environmental risk on cognitive development, and also compare these effects across people in industrialising (India) and industrialised (U.K.) societies.
- The C-Veda project expects to map the brains of those participating in the study and thereby evaluate and compare neurological development.

What is C-Veda project?

- c-VEDA is jointly funded by the Indian Council for Medical Research (ICMR) and the Newton Grant from the Medical Research Council (MRC), United Kingdom.
- Principal Investigators for this study are Professor Gunter Schumann, King’s College London (KCL; London, UK) and Dr Vivek Benegal, National Institute of Mental Health and Neurosciences (NIMHANS; Bangalore, India).
- It seeks to investigate if environmental and genetic risk factors in industrialised countries and emerging societies shape brain function and behaviour in distinct ways, thus leading to different risk constellations and neurobehavioural trajectories for substance misuse and externalising disorders.



World Women Boxing Championship 2023

Why in News

India has bagged four gold medals in 13th edition of the championships, held in New Delhi, India.

Important Points

World Boxing Championship

- The International Boxing Association (IBA) World Boxing Championships, and the IBA Women's World Boxing Championships (previously known as AIBA), are biennial amateur boxing competitions organised by the International Boxing Association (IBA), which is the sport governing body.
- Alongside the Olympic boxing programme, they are the highest level of competition for the sport.
- The championships were first held for men in 1974 and the first women's championships were held over 25 years later in 2001.
- Both championships are held separately on biennial schedules.
- Since 1989 the men's championships are held every odd year; the women's championships were held in even years between 2006 and 2018 and switched to a nominal odd-year schedule in 2019.
- 13th edition of World Women Boxing Championship was boycotted by multiple nations due to participation of athletes from Russia and Belarus.
- In the 13 edition medal winners were awarded prize money; gold medallists earn \$100,000, silver medallists \$50,000, and bronze medallists \$25,000. The overall prize fund was \$2.4 million.

India's

- Nitu Ghanghas bagged gold by defeating Lutsaikhan Altansetseg of Mongolia in the 48kg final at the IBA.
- Nitu became only the sixth Indian boxer, male or female, to become a world champion.
- Three-time Asian medallist Saweety Boora defeated Wang Lina of China in the 81kg final via a split verdict.
- Nikhat Zareen won her second Women's World Boxing Championships Gold medal by defeating Thi Tham Nguyen of Vietnam in the 50kg final via a unanimous decision (5-0) to defend her title.
- Nikhat has become only the 2nd Indian female boxer after Mary Kom to win multiple gold medals at the IBA Women's World Championships.
- Mary, who won the Olympics Bronze in London, scripted history by winning 6 World Championships gold medals with her last coming in New Delhi in 2018.
- India's Lovlina Borgohain won her maiden World Championships gold medal. The Tokyo Olympics bronze medalist defeated Australia's Caitlin Parker via a split decision in a closely-fought 75kg final bout.

International Boxing Association (IBA)

- The IBA, previously known as the Association Internationale de Boxe Amateur (AIBA), is an independent sport organization that sanctions amateur (Olympic-style) boxing matches and awards world and subordinate championships.
- IBA consists of five continental confederations — AFBC, AMBC, ASBC, EUBC, OCBC. The association includes 203 national boxing federations.
- The IBA was recognised by the International Olympic Committee (IOC) as the international governing body for the sport of boxing until 2019, when the IOC suspended its recognition of the federation.

