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1. INDIAN SOCIETY & POLITY

1. Right to Sit to be mandated in Tamil Nadu

Why in News?

- The Tamil Nadu government has tabled a Bill in the Legislative Assembly making it mandatory for establishments to provide seating facilities for employees.

Right to Sit:

- The Right to Sit is aimed to benefit thousands of employees of large and small establishments, particularly those working in textile and jewelry showrooms.
- Persons employed in shops and establishments in the State are made to stand throughout their duty time resulting in varied health issues.
- The bill mandates for every premises of establishments to have suitable seating arrangements for all employees so that they may take advantage of any opportunity to sit in the course of their work.
- This would avoid the 'on their toes' situation throughout the working hours.

Inspired from Kerala:

- A few years ago, workers of textile showrooms in Kerala had gone on a protest demanding the 'Right to Sit', prompting the government there to amend the Kerala Shops and Establishments Act in 2018.
- This in turn provided seating arrangements for them.

A Move for Women:

- Most owners of shops and other retail outlets forbid women, the bulk of the shop workforce, to sit. Even leaning against a wall was punished. They have varicose veins and joint pain from standing.

2. Gupta Era Temple uncovered in UP

Why in News?

- Last week, the Archaeological Survey of India (ASI) discovered remains of an ancient temple dating back to the Gupta period (5th century) in a village in Uttar Pradesh's Etah district.

Findings of the Excavation:

- The Bilsarh site was declared 'protected' in 1928.
- Every year, the ASI undertakes scrubbing work at the protected sites.

- This year, the team discovered two decorative pillars close to one another, with human Figurines resembling an ancient temple.
- The stairs of the temple had ‘shankhalipi’ inscriptions, which were deciphered by the archaeologists as saying, ‘Sri Mahendraditya’, the title of Kumaragupta I of the Gupta dynasty.

Who was Kumaragupta I?

- Kumaragupta I was an emperor of the Gupta Empire of Ancient India.
- A son of the Gupta emperor Chandragupta II and queen Dhruvadevi, he seems to have maintained control of his inherited territory, which extended from Gujarat in the west to Bengal region in the east.
- In the 5th century, Kumaragupta I ruled for 40 years over north-central India.
- Skandagupta, son and successor of Kumaragupta I is generally considered to be the last of the great Gupta rulers.
- He assumed the titles of Vikramaditya and Kramaditya.

What is the Shankhalipi script?

- Shankhalipi or “shell-script” is a term used by scholars to describe ornate spiral characters assumed to be Brahmi derivatives that look like conch shells or shankhas.
- They are found in inscriptions across north-central India and date to between the 4th and 8th centuries. Both Shankhalipi and Brahmi are stylised scripts used primarily for names and signatures. The inscriptions consist of a small number of characters, suggesting that the shell inscriptions are names or auspicious symbols or a combination of the two.

Chronology and Meaning:

- The script was discovered in 1836 on a brass trident in Uttarakhand’s Barahat by English scholar James Prinsep, who was the founding editor of the Journal of the Asiatic Society of Bengal.
- A year later, he came across two more similar scripts at Nagarjuna group of caves in the Barabar Hills near Gaya.
- Prominent sites with shell inscriptions include the Mundeshwari Temple in Bihar, the Udayagiri Caves in Madhya Pradesh, Mansar in Maharashtra and some of the cave sites of Gujarat and Maharashtra.
- In fact, shell inscriptions are also reported in Indonesia’s Java and Borneo.
- Scholars have tried to decipher shell script but have not been successful.

3. National Mission on Cultural Mapping

Why in News?

- Having made little progress since its launch in 2017, the National Mission on Cultural Mapping has now been handed over to the Indira Gandhi National Centre for the Arts (IGNCA).

National Mission on Cultural Mapping:

- The NCMCM is a mission mode project of the Ministry of Culture. It was incepted in 2015.
- It is aimed to address the necessity of preserving the threads of rich Indian Art and Cultural Heritage, convert vast and widespread cultural canvas of India into an objective Cultural Mapping while creating a strong “Cultural Vibrancy” throughout the nation.
- It will identify, collect and record cultural assets and resources. It correlates this to planning and strategizing.
- A portal and a database listing organisations, spaces, facilities, festivals and events will be created.
- This database can be used to preserve culture and provide or ameliorate livelihoods.

Objectives of the Mission:

- Under this Mission, at broad-level, there are three important objectives as follows:
 - ✓ National Cultural Awareness Abhiyan: Hamari Sanskriti Hamari Pahchan Abhiyan (Our Culture Our Identity)
 - ✓ Nationwide Artist Talent Hunt/Scouting Programme: Sanskritik Pratibha Khoj Abhiyan
 - ✓ National Cultural Workplace: Centralised Transactional Web Portal with database and demography of cultural assets and resources including all art forms and artists.

Significance of the Mission:

- Revival and safeguarding of oral traditions
- Fostering Cultural Awareness
- Cultural Preservation
- Sustainable Employment to creative industries
- Optimal Resource Allocation and Utilization:
- Creation of objective Database for inclusive growth of cultural heritage

2. GOVERNANCE

1. Glue Grant Scheme

Why in News?

- Forty Central universities will kick off the implementation of innovative measures such as the academic credit bank and the glue grant meant to encourage multidisciplinary in UG courses.

Glue Grant Scheme:

- Under the glue grant, announced in this year's budget, institutions in the same city would be encouraged to share resources, equipment and even allow their students to take classes from each other.
- This is the first step for multidisciplinary.
- We intend to start this from the second semester of the current academic year.
- Ultimately, faculty will be able to design joint courses.
- This also meant that institutions need not duplicate work by developing the same capacities, but would be able to build on each other's expertise.

Credit Bank:

- The first step would be the academic credit bank, which would have to be adopted separately by the academic council of each university to kick off implementation.
- To start with, the system would allow students to attain qualifications by amassing credits rather than specific durations on campus.
- A certain number of credits would add up to a certificate, then a diploma and then a degree, allowing for multiple entry and exit points.
- Students can earn up to 40% of their credits in online Swayam classes, rather than in the physical classroom. In the future, these credits will hold validity across different institutions.

2. The nutrition-hygiene link

Why in News?

- A recent UNICEF report stated that nearly 12 lakh children could die in low-income countries in the next six months due to a decrease in routine health services and an increase in wasting. Nearly three lakh such children would be from India.

Problem of nutrition in India and factors responsible for it:

- The National Family Health Survey (NFHS 5) indicates that since the onset of the pandemic, acute undernourishment in children below the age of five has worsened.
- According to the latest data, 37.9 per cent of children under five are stunted, and 20.8 per cent are wasted — a form of malnutrition in which children are too thin for their height.
- Comparison with other countries: This is much higher than in other developing countries where, on average, 25 per cent of children suffer from stunting and 8.9 per cent are wasted.
- Factors: Inadequate dietary intake is the most direct cause of undernutrition.
- Several other factors also affect nutritional outcomes, such as contaminated drinking water, poor sanitation, and unhygienic living conditions.
- According to the World Health Organisation, 50 per cent of all mal- and under-nutrition can be traced to diarrhoea and intestinal worm infections.
- Nutrition and water, sanitation, and hygiene (WASH) are intricately linked, and changes in one tend, directly or indirectly, to affect the other.
- Poor hygiene and sanitation in developing countries leads to a sub-clinical condition called “environmental enteropathy” in children.
- Environmental enteropathy is a disorder of the intestine which prevents the proper absorption of nutrients, rendering them effectively useless.
- Childhood diarrhoea is a major public health problem in low- and middle-income countries, leading to high mortality in children under five.
- According to NFHS 4, approximately 9 per cent of children under five years of age in India experience diarrhoeal disease.

Way Forward:

- Investment in WAST: The link between WASH and nutrition suggests that greater attention to, and investments in, WASH are a sure-shot way of bolstering the country’s nutritional status.
- Addressing nutrition sanitation problems together: Both WASH and nutrition must be addressed together through a lens of holistic, sustainable community engagement to enable long-term impact.
- One of the first instances of the link between WASH and nutrition appeared in the Convention on the Rights of the Child in 1989, which urges states to ensure “adequate nutritious foods and clean drinking water” to combat disease and malnutrition.

- Safe drinking water, proper sanitation and hygiene can significantly reduce diarrhoeal and nutritional deaths.
- Multistuctural approach: What we require is a coordinated, multisectoral approach among the health, water, sanitation, and hygiene bodies, not to mention strong community engagement.
- WHO has estimated that access to proper water, hygiene and sanitation can prevent the deaths of at least 8,60,000 children a year caused by undernutrition.
- At the end of the day, all sides are working towards a common goal: A safe and healthy population and the hope that the 75th year of Independence becomes a watershed moment in India's journey.

3. Reforms in Urban Planning Capacity in India

Why in News?

- NITI Aayog has launched a report titled 'Reforms in Urban Planning Capacity in India' on measures to ramp up urban planning capacity in India.

Reforms in Urban Planning:

- The report has been developed by NITI Aayog, in consultation with concerned ministries and eminent experts in the domain of urban and regional planning.
- It underscores urban challenges, including town planning and emphasizes need Greater Policy Attention in our country.

Why such Report?

- India is home to 11% of the total global urban population.
- By 2027, India will surpass China as the most populous country in the world.
- Unplanned urbanization, however, exerts great strain on our cities. In fact, the Covid-19 pandemic has revealed the dire need for the planning and management of our cities.
- The existing urban planning and governance framework is complex, which often leads to ambiguity and lack of accountability.

Highlights of the report:

- The report makes several recommendations that can unblock bottlenecks in the value chain of urban planning capacity in India. Some of them are:
- Programmatic Intervention for Planning of Healthy Cities:
- Every city must aspire to become a 'Healthy City for All' by 2030.

- The report recommends a Central Sector Scheme ‘500 Healthy Cities Programme’, for a period of 5 years, wherein priority cities and towns would be selected jointly by the states and local bodies.
- Programmatic Intervention for Optimum Utilization of Urban Land:
- All the cities and towns under the proposed ‘Healthy Cities Programme’ should strengthen development control regulations based on scientific evidence to maximize the efficiency of urban land (or planning area).
- The report recommends a sub-scheme ‘Preparation/Revision of Development Control Regulations’ for this purpose.

Ramping Up of Human Resources:

- To combat the shortage of urban planners in the public sector, the report recommends that the states/UTs may need to a) expedite the filling up of vacant positions of town planners.
- It asks to additionally sanction 8268 town planners’ posts as lateral entry positions.
- Ensuring Qualified Professionals for Undertaking Urban Planning:
- State town and country planning departments face an acute shortage of town planners.
- This is compounded by the fact that in several states, ironically, a qualification in town planning is not even an essential criterion for such jobs.
- States may need to undertake requisite amendments in their recruitment rules to ensure the entry of qualified candidates into town-planning positions.

Re-engineering of Urban Governance:

- The report recommends the constitution of a high-powered committee to re-engineer the present urban-planning governance structure.
- The key aspects that would need to be addressed in this effort are:
- clear division of the roles and responsibilities of various authorities, appropriate revision of rules and regulations, etc.,
- creation of a more dynamic organizational structure, standardisation of the job descriptions of town planners and other experts, and
- extensive adoption of technology for enabling public participation and inter-agency coordination.

Revision of Town and Country Planning Acts:

- Most States have enacted the Town and Country Planning Acts, that enable them to prepare and notify master plans for implementation.

- However, many need to be reviewed and upgraded.
- Therefore, the formation of an apex committee at the state level is recommended to undertake a regular review of planning legislations (including town and country planning or urban and regional development acts or other relevant acts).

Demystifying Planning and Involving Citizens:

- While it is important to maintain the master plans' technical rigour, it is equally important to demystify them for enabling citizens' participation at relevant stages.
- Therefore, the committee strongly recommends a 'Citizen Outreach Campaign' for demystifying urban planning.

Steps for Enhancing the Role of Private Sector:

- The report recommends that concerted measures must be taken at multiple levels to strengthen the role of the private sector to improve the overall planning capacity in the country.
- These include the adoption of fair processes for procuring technical consultancy services, strengthening project structuring and management skills in the public sector, and empanelment of private sector consultancies.

Steps for Strengthening Urban Planning Education System:

- The Central universities and technical institutions in all the other States/UTs are encouraged to offer PG degree programmes (MTech Planning) to cater to the requirement of planners in the country.
- The committee also recommends that all such institutions may synergize with Ministry of Rural Development, Ministry of Panchayati Raj and respective state rural development departments.
- Measures for Strengthening Human Resource and Match Demand–Supply:
- The report recommends the constitution of a 'National Council of Town and Country Planners' as a statutory body.
- Also, a 'National Digital Platform of Town and Country Planners' is suggested to be created within the National Urban Innovation Stack of MoHUA.
- This portal will enable self-registration of all planners and evolve as a marketplace for potential employers and urban planners.

4. Front-of-pack labelling of Food Stuffs

Why in News?

- Seven years, four committees and two draft regulations later, India still does not have a clear labelling system to warn consumers about harmful levels of fat, salt and sugar in processed foods.

Context:

- According to the Food Safety and Standards (Packaging and Labelling) Regulations, 2011, every pre-packed processed food product sold in the country must be labelled with nutritional information.
- To ensure that consumers are able to easily see and interpret the nutritional information on food packets, an expert committee was established by the Food Safety and Standards Authority of India (FSSAI).
- The committee, set up following an order of the Delhi High Court which was hearing a public interest petition seeking a ban on the sale of junk food in and around schools.

Why Label Nutritional Information?

- This helps the consumer know everything about the food they buy and make an informed decision about what and how much to eat.
- Such information is particularly crucial because the packaged food contain ultra-processed foods that are high in fat, salt or sugar and low in fibre and other essential micronutrients.
- On the one hand, these foods cause malnutrition.
- On the other hand they are linked strongly with obesity and diet-related non-communicable diseases, such as Type-2 diabetes, hypertension, heart ailments and certain cancers, like that of the colon.
- All these increase the risk of premature death.

Issues with labelling in India:

- Not to mention that most products provide information in English understanding which can be daunting for a vast number of people in India.

What is FoP labelling?

- The front-of-pack (FoP) labelling system has long been listed as one of the global best practices to nudge consumers into healthy food choices.
- It works just the way cigarette packets are labelled with images to discourage consumption.

- Countries such as Chile, Brazil and Israel have laws to push the packaged food industry to adopt FoP labelling.
- They have used FoP labelling as a measure to fight obesity and NCDs.

FoP labelling in India:

- The system is yet to be implemented in India even seven years after it was first proposed by FSSAI.
- The fact is, makers of packaged foods are also a powerful lot, with strong business acumen.
- While companies in other countries have acceded to the FoP labelling laws, they are unwilling to do so in India – a country experiencing a dietary shift.

Why must we have FoP labels?

- Countries are working to find ways to nudge consumers into healthy food choices and to contain the growing crisis of obesity and diet-related non-communicable diseases (NCDs).
- It is a crisis that increasingly impacts children and also exacerbates novel coronavirus disease (COVID-19) symptoms. Front-of-pack (FoP) labelling is definitely an effective tool in this effort.
- India definitely needs ‘warning labels’ on front-of-pack, but this must be a symbol-based label with no text and numbers. This is because:

(1) Junk foods have high levels of unhealthy nutrients

- ✓ There is strong evidence that sugar, salt and fat in junk foods are addictive, like nicotine in tobacco.
- ✓ FoP ‘warning’ labels have helped reduce cigarette consumption. It is time we adopted the same for junk foods.

(2) Warning labels are easy to notice and understand

- ✓ They do not confuse consumers with mixed messages.
- ✓ Their distinct shape, colour and size make them noticeable in the otherwise cluttered and colourful packaging.
- ✓ With one label for one nutrient, it becomes easier to know if a product is high in more than one nutrient.

(3) Warning labels are the global best practice now

- ✓ At least seven countries have adopted warning labels in the past five years. These include Chile, Peru, Mexico, Israel and Uruguay.
- ✓ Low- and middle-income mothers have shown profound changes in attitudes towards food purchases as they now understand the nutritional content of packaged foods.

- ✓ Even children can read the labels and take an informed decision. This has also forced food companies to reduce the amount of sugar and sodium in foods and beverages.

(4) They are best suited for India

- ✓ Warning labels are best suited for India as they do not include numbers unlike many other FoP labels.
- ✓ In fact, warning labels that are symbol-based, like that of Israel, can transcend the barriers of literacy and language in India.

(5) FSSAI has experience of successfully implementing symbol-based FoP labels

- ✓ Its “green filled circle in green outlined square” logo to depict vegetarian food has been hugely successful in informing consumers.
- ✓ In recent years, FSSAI also has made similar laws to depict fortification (+F logo) and organic food (a green-coloured tick for Jaivik Bharat logo).

Way Forward:

- FoP labels must include information on nutrients that make food injurious to health.
- This should be distinct from the details on the back-of-pack. FoP labels should aim to inform the consumer, while the back-of-pack label serves the purpose of scientific compliance and enforcement.
- FoP labels should have information on ‘total sugar’ and not ‘added sugar’.
- There is no analytical laboratory method to differentiate ‘added sugar’ from total sugar and quantify it.

5. Right to Govt. Aid is not a Fundamental Right: SC

Why in News?

- The right of an Institution, whether run by a majority or minority community, to get Government aid is not a Fundamental Right. Both have to equally follow the rules and conditions of the aid, the Supreme Court held in a judgment.

What is the Case About?

- The judgment came in an appeal filed by Uttar Pradesh against a decision of the Allahabad High Court to declare a provision of the Intermediate Education Act of 1921 unconstitutional.

Key takeaways from the Judgment:

- The SC has clarified that if the government made a policy call to withdraw aid, an institution cannot question the decision as a “matter of right”.

- Whether it is an institution run by the majority or the minority, all conditions that have relevance to the proper utilisation of the grant-in-aid by an educational institution can be imposed.
- All that Article 30(2) states is that on the ground that an institution is under the management of a minority, whether based on religion or language.
- The grant of aid to that educational institution cannot be discriminated against, if other Educational Institutions are entitled to receive aid.

Basis of the Judgment:

- A grant of government aid comes with accompanying conditions.
- An institution is free to choose to accept the grant with the conditions or go its own way.
- If an institution does not want to accept and comply with the conditions accompanying such aid, it is well open to it to decline the grant and move in its own way.
- On the contrary, an institution can never be allowed to say that the grant of aid should be on its own terms, the Bench observed.

Various Grounds Discussed:

- The court explained why institutions cannot view government aid as a “matter of right”.
- Government aid is a policy decision: It depends on various factors including the interests of the institution itself and the ability of the government to understand the exercise. Therefore, even in a case where a policy decision is made to withdraw the aid, an institution cannot question it as a matter of right.
- Financial constraints and deficiencies: These are the factors which are considered relevant in taking any decision qua aid, including both the decision to grant aid and the manner of disbursement of an aid.
- Not arbitrary decision: The bench said that a policy decision is presumed to be in public interest, and such a decision once made is not amenable to challenge, until and unless there is manifest or extreme arbitrariness, a Constitutional court is expected to keep its hands off.

Minority Rights in India:

- Article 15: prohibits discrimination on grounds of religion race cast sex or place of birth
- Article 17: prohibits untouchability
- Article 25 provides the right to practice any religion.
- Article 26 allows religious institutions to be opened.

- Article 27 provides that no person shall be forced to pay any taxes which is not mandatory.
- Article 28 provides that there shall be no religious instruction to be followed in any particular educational institutions.
- Article 29 provides that no citizen shall be denied admission in any educational institution on grounds of religion race caste.
- Article 30 provides that minority shall not be prohibited from any educational institutions.

6. Digital Health ID

Why in News?

- The PM has recently launched the flagship Ayushman Bharat Digital Mission (ABDM) which involves the creation not just a unique digital health ID for every citizen.

What is the unique Health ID?

- If a person wants to be part of the ABDM, she must create a health ID, which is a randomly generated 14-digit number. The ID will be broadly used for three purposes: unique identification, authentication, and threading of the beneficiary's health records, only with their informed consent, across multiple systems and stakeholders.

Why is this Initiative Significant?

- The initiative has the potential to “increase the ease of living” along with “simplifying the procedures in hospitals”.
- At present, the use of digital health ID in hospitals is currently limited to only one hospital or to a single group, and mostly concentrated in large private chains.
- The new initiative will bring the entire ecosystem on a single platform.
- The system also makes it easier to find doctors and specialists nearest to you.
- Currently, many patients rely on recommendations from family and friends for medical consultation, but now the new platform will tell the patient who to reach out to, and who is the nearest.
- Also, labs and drug stores will be easily identified for better tests using the new platform.

How can one get it?

- One can get a health ID by self-registration on the portal or by downloading the ABMD Health Records app on one's mobile.
- Additionally, one can also request the creation of a health ID at a participating health facility.

- Health facilities may include government or private hospitals, community health centres, and wellness centres of the government across India.
- The beneficiary will also have to set up a Personal Health Records (PHR) address for consent management, and for future sharing of health records.

What is a PHR Address?

- It is a simple self-declared username, which the beneficiary is required to sign into a Health Information Exchange and Consent Manager (HIE-CM).
- Each health ID will require linkage to a consent manager to enable sharing of health records data. An HIE-CM is an application that enables sharing and linking of personal health records for a user.
- At present, one can use the health ID to sign up on the HIE-CM; the National Health Authority (NHA), however, says multiple consent managers are likely to be available for patients to choose from in the near future.

What does one need to Register for a Health ID?

- Currently, ABDM supports health ID creation via mobile or Aadhaar.
- The official website states that ABDM will soon roll out features that will support health ID creation with a PAN card or a driving licence.
- For health ID creation through mobile or Aadhaar, the beneficiary will be asked to share details on name, year of birth, gender, address, mobile number/Aadhaar.

Is Aadhaar mandatory?

- One can use one's mobile number for registration, without Aadhaar.
- If the beneficiary chooses the option of using her Aadhaar number, an OTP will be sent to the mobile number linked to the Aadhaar.
- However, if she has not linked it to her mobile, the beneficiary has to visit the nearest facility and opt for biometric authentication using Aadhaar number.
- After successful authentication, she will get her health ID at the participating facility.

Are Personal Health Records Secure?

- The NHA says ABDM does not store any of the beneficiary health records.
- The records are stored with healthcare information providers as per their "retention policies".
- They are "shared" over the ABDM network "with encryption mechanisms" only after the beneficiary express consent.

Can one Delete My Health ID and exit the Platform?

- Yes, the NHA says ABDM, supports such a feature. Two options are available: a user can permanently delete or temporarily deactivate her health ID.
- On deletion, the unique health ID will be permanently deleted, along with all demographic details.
- The beneficiary will not be able to retrieve any information tagged to that health ID in the future, and will never be able to access ABDM applications or any health records over the ABDM network with the deleted ID.
- On deactivation, the beneficiary will lose access to all ABDM applications only for the period of deactivation.
- Until she reactivates her health ID, she will not be able to share the ID at any health facility or share health records over the ABDM network.

What facilities are Available to Beneficiaries?

- Users can access personal digital health records right from admission through treatment and discharge.
- One can access and link his/her personal health records with your health ID to create a longitudinal health history.

What other Features will be Rolled Out?

- Upcoming new features will enable access to verified doctors across the country.
- The beneficiary can create a health ID for her child, and digital health records right from birth. Third, she can add a nominee to access her health ID and view or help manage the personal health records.
- Also, there will be much inclusive access, with the health ID available to people who don't have phones, using assisted methods.

How do private players get Associated with a Government Digital ID?

- The NHA has launched the NDHM Sandbox: a digital architecture that allows helps private players to be part of the National Digital Health Ecosystem as health information providers or health information users.
- The private player sends a request to NHA to test its system with the Sandbox Environment.
- The NHA then gives the private player a key to access the Sandbox environment and the health ID application programming interface (API).

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- The private player then has to create a Sandbox health ID, integrate its software with the API; and register the software to test link records and process health data consent requests.
 - Once the system is tested, the system will ask for a demo to the NHA to move forward. After a successful demo, the NHA certifies and empanels the private hospital.



3. SCIENCE & TECHNOLOGY

1. West Nile Virus outbreak in Russia

Why in News?

- Russia warned of a possible increase in West Nile virus infections this autumn as mild temperatures and heavy precipitation create favorable conditions for the mosquitos that carry it.

West Nile virus (WNV):

- WNV is mainly transmitted through mosquito bites and can lead to fatal neurological disease in humans, although most people infected never develop any symptoms.
- Cases of WNV occur during mosquito season, which starts in the summer and continues through fall.

Its origin:

- Originally from Africa, the WNV has spread to Europe, Asia, and North America.
- It was first isolated in a woman in the West Nile district of Uganda in 1937.
- It was identified in birds in the Nile delta region in 1953.
- Before 1997, WNV was not considered pathogenic for birds.
- Human infections attributable to WNV have been reported in many countries for over 50 years.

Symptoms:

- **Infected persons usually have no symptoms or mild symptoms.**
 - ✓ Some of the symptoms include fever, headache, body aches, skin rash, and swollen lymph glands.
 - ✓ They can last a few days to several weeks and usually, go away on their own.
 - ✓ Prolonged illness may cause inflammation of the brain, called encephalitis, or inflammation of the tissue that surrounds the brain and spinal cord, called meningitis.
- **Treatment**
 - ✓ There is no vaccine against the virus in humans although one exists for horses, the WHO says.

2. Formation of Blue Straggler

Why in News?

- Carrying out the first-ever comprehensive analysis of blue stragglers, Indian researchers found that half of the blue stragglers in their sample are formed through mass transfer from a close binary companion star.

What are Blue Stragglers?

- A blue straggler is a main-sequence star in an open or globular cluster that is more luminous and bluer than stars at the main sequence turnoff point for the cluster.
- The most likely explanation is that blue stragglers are the result of stars that come too close to another star or similar mass object and collide.
- The newly-formed star has thus a higher mass and occupies a position on the HR diagram which would be populated by genuinely young stars.
- One-third of them are likely formed through collisions of 2 stars, and the remaining are formed through interactions of more than 2 stars.

How are they Formed?

- A bunch of stars born at the same time from the same cloud form a star cluster.
- As time passes, each star evolves differently depending on its mass.
- The most massive and bright stars evolve and move off the main sequence creating a bend in their track, known as the turnoff.
- Stars above this bend or brighter and hotter stars are not expected in a cluster, as they leave the main sequence to become red giants.
- But in 1953, Allan Sandage found that some stars seem to be hotter than the turnoff of the parent cluster.

Behind the nomenclature:

- Initially, these blue stars still straggling above the turnoff were not part of these clusters.
- However, later studies confirmed that these stars are indeed cluster members, and they were termed “Blue Stragglers”.
- The only probable way these stars can still be present in these clusters is if they have somehow acquired extra mass along the way while on the main sequence.
- Confirming the mechanisms of the mass gain required a study using a large sample of blue-straggler stars and estimates of the mass they have gained.

What has Indian Researchers found?

- Research showed that these stars are primarily present in the older and massive star clusters. And due to their large mass, they are segregated towards the centre of the clusters. The researchers compared the mass of the blue stragglers to the mass of the turnoff stars (which are the most massive ‘normal’ stars in the cluster) and predicted the formation mechanisms.
- The study will help improve understanding of these stellar systems to uncover exciting results in studies of large stellar populations, including galaxies.
- Following these findings, the researchers are conducting detailed analyses of individual blue stragglers in the catalogue to obtain their stellar properties.

3. Behler Turtle Conservation Award

Why in News?

- Indian biologist Shailendra Singh has been awarded the Behler Turtle Conservation Award for bringing three critically endangered turtle conservation species back from the brink of extinction.

Behler Turtle Conservation Award:

- The Award is a major annual international award honoring excellence in the field of tortoise and freshwater turtle conservation and biology, and leadership in the chelonian Conservation and Biology Community.
- It is co-presented by the Turtle Survival Alliance (TSA), the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group (TFTSG) among others.
- It is widely considered the “Nobel Prize” of turtle conservation and biology.

Citation for the 2021 Award:

- For some species, such as the Red-crowned Roofed Turtle (*Batagur kachuga*), Northern River Terrapin (*Batagur baska*), and Black Softshell Turtle (*Nilssonina nigricans*) Dr. Singh and his team’s efforts are the last hope for their wild survival in the country.
- In just 15 years, there are few individuals that have made such monumental contributions to turtle conservation.

Turtles in India:

- The Northern River Terrapin (*Batagur baska*) is being conserved at the Sunderbans; the Red-crowned Roofed Turtle (*Batagur kachuga*) at Chambal; and the Black Softshell Turtle (*Nilssonina nigricans*) at different temples in Assam.

- These critically endangered turtles are being conserved as a part of TSA India's research, conservation breeding and education programme in different parts of the country.
- There are 29 species of freshwater turtles and tortoises in the country.

Turtle Survival Alliance (TSA):

- The TSA was formed in 2001 as an International Union for Conservation of Nature (IUCN) partnership for sustainable captive management of freshwater turtles and tortoises.
- This alliance arose in response to the rampant and unsustainable harvest of Asian turtle populations to supply Chinese markets, a situation known as the Asian Turtle Crisis

4. Inspiration4: SpaceX's first all-civilian Space Mission

Why in News?

- SpaceX has announced its 'Inspiration4' mission, the first all-civilian, non-governmental spaceflight, for launch.

What is Inspiration4?

- Inspiration4 is a part of an effort to raise funds for paediatric treatment and research facility that focuses on children's catastrophic diseases, particularly leukaemia and other cancers.
- The mission involves circling the Earth for three days and then splashing down into the Atlantic Ocean.
- Inspiration4 will orbit the Earth at 575km, higher than the International Space Station (408km) and the Hubble space telescope (547km).
- This will be the farthest distance travelled by a crewed mission since 2009, when astronauts last went to repair the Hubble.
- The Dragon module that the group will be using has also been modified for the mission.
- Usually, the SpaceX module is used for travelling to the ISS, where it has to dock or join the floating laboratory.

Dome window:

- Since Inspiration4 is not going to the ISS, the docking port has been removed and has been replaced with a dome window instead.
- This dome window will offer breath-taking views of the Earth for the four travellers.
- The window has been inspired by the Cupola, a module on the ISS used to make observations about our planet.

Why is the Mission Significant?

- According to a report in the Independent, the journey will present an opportunity for collecting large amounts of health data that will aid in planning future crewed space missions.
- As per the report, they will collect data on ECG (electrocardiograph) activity, movement, sleep, heart rate and rhythm, blood oxygen saturation, cabin noise and light intensity, which will help in assessing behavioral and cognitive changes over the journey.
- The travellers will undergo balance and prescription tests just before and after their journey to assess their response to the change in gravity.
- The immune system function will also be monitored by collecting blood. Their organ systems will also be monitored by an AI-powered ultrasound device.

5. Solar Storm

Why in News?

- Studies have found that a powerful solar storm can cause a disruption of the internet, damage submarine cables, and communication satellites.

What is a Solar Storm?

- A solar storm or a Coronal Mass Ejection as astronomers call it is an ejection of highly magnetized particles from the sun.
- These particles can travel several million km per hour and can take about 13 hours to five days to reach Earth.
- Earth's atmosphere protects us, humans, from these particles.
- But the particles can interact with our Earth's magnetic field, induce strong electric currents on the surface and affect man-made structures.

History of Solar Storms:

- The first recorded solar storm occurred in 1859 and it reached Earth in about 17 hours.
- It affected the telegraph network and many operators experienced electric shocks.
- A solar storm that occurred in 1921 impacted New York telegraph and railroad systems and another small-scale storm collapsed the power grid in Quebec, Canada in 1989.
- A 2013 report noted that if a solar storm similar to the 1859 one hit the US today, about 20-40 million people could be without power for 1-2 years, and the total economic cost will be \$0.6-2.6 trillion.

Why is it a cause of concern?

- The Sun goes through an 11-year cycle – cycles of high and low activity.
- It also has a longer 100-year cycle.
- During the last three decades, when the internet infrastructure was booming, it was a low period.
- And very soon, either in this cycle or the next cycle, we are going towards the peaks of the 100-year cycle.

6. Serotype 2 Dengue

Why in News?

- The Union Health Ministry has flagged the emerging challenge in 11 States across India of serotype 2 dengue, which it said is associated with “more cases and more complications” than other forms of the disease.

Dengue:

- Dengue is a mosquito-borne viral infection, found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas.
- It is transmitted by female mosquitoes mainly of the species *Aedes aegypti* and, to a lesser extent, *Ae. albopictus*. These mosquitoes are also vectors of chikungunya, yellow fever and Zika viruses. Dengue is widespread throughout the tropics, with local variations in risk influenced by rainfall, temperature, relative humidity and unplanned rapid urbanization.

Its Transmission:

- The virus is transmitted to humans through the bites of infected female mosquitoes, primarily the *Aedes aegypti*
- Other species within the *Aedes* genus can also act as vectors, but their contribution is secondary to *Aedes aegypti*.
- Mosquitoes can become infected from people who are viremic with dengue.

Various serotypes:

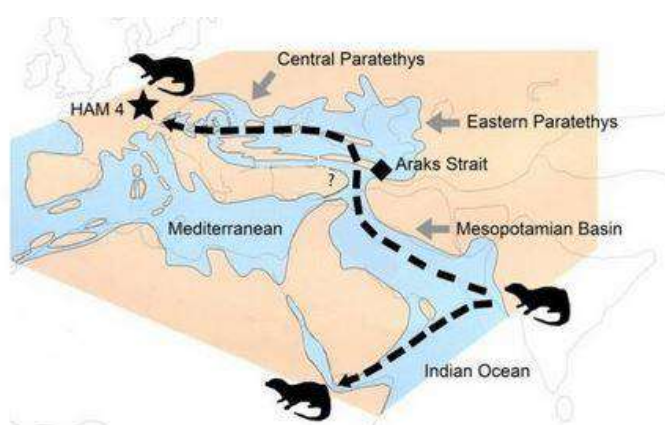
- Dengue is caused by a virus of the Flaviviridae family and there are four distinct, but closely related, serotypes of the virus that cause dengue (DENV-1, DENV-2, DENV-3 and DENV-4).
- Recovery from infection is believed to provide lifelong immunity against that serotype.

- However, cross-immunity to the other serotypes after recovery is only partial and temporary.
- Subsequent infections (secondary infection) by other serotypes increase the risk of developing severe dengue.

7. Vishnuonyx

Why in News?

- Between 12.5 million and 14 million years ago, members of a genus of otters called Vishnuonyx lived in the major rivers of southern Asia.



Vishnuonyx Neptuni:

- Vishnuonyx were mid-sized predators that weighed, on average, 10-15 kg.
- Before this, the genus was known only in Asia and Africa (recent findings show that Vishnuonyx reached East Africa about 12 million years ago, according to the release).
- Vishnuonyx depended on water and could not travel long distances over land.

Why in News?

- German researchers have discovered the fossil of a previously unknown species, which they have named Vishnuonyx neptuni, meaning 'Neptune's Vishnu'.
- Fossils of these now extinct otters were first discovered in sediments found in the foothills of the Himalayas.
- Now, a newly found fossil indicates it had travelled as far as Germany. '.
- The dispersal of Vishnuonyx otters from the Indian subcontinent to Africa and Europe about 13 million years ago. '.
- This is the first discovery of any member of the Vishnuonyx genus in Europe; it is also its most northern and western record till date.

How did it travel as far as Europe?

- According to the researchers, its travels over 6,000 km were probably made possible by the Geography of 12 million years ago, when the Alps were recently formed.
- These Alps and the Iranian Elbrus Mountains were separated by a large ocean basin, which would have made it easier for the otters to cross it.
- Researchers believe ‘Neptune’s Vishnu’ first reached southern Germany, followed by Ancient Guenz and eventually, the Hammerschmiede.

8. Dark Energy

Why in News?

- Last week, an international team of researchers has made the first direct detection of dark energy.

Highlights:

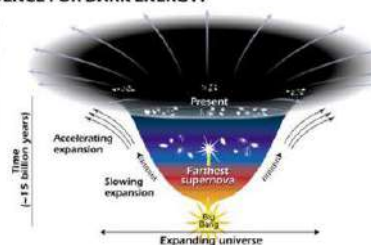
- The XENON1T experiment is the world’s most sensitive dark matter experiment and was operated deep underground at the INFN Laboratori Nazionali del Gran Sasso in Italy.
- The finding also suggests that experiments like XENON1T, which are designed to detect dark matter, could also be used to detect dark energy.

What is Dark Energy?

- Dark energy is an unknown form of energy that affects the universe on the largest scales.
- The first observational evidence for its existence came from measurements of supernovae, which showed that the universe does not expand at a constant rate; rather, the expansion of the universe is accelerating.
- Prior to these observations, it was thought that all forms of matter and energy in the universe would only cause the expansion to slow down over time.
- Measurements of the cosmic microwave background suggest the universe began in a hot Big Bang, from which general relativity explains its evolution and the subsequent large-scale motion.
- Without introducing a new form of energy, there was no way to explain how an accelerating universe could be measured.

WHAT IS THE EVIDENCE FOR DARK ENERGY?

Astronomers note that the universe has expanded at different rates throughout history. For the first half of the universe’s life, following the Big Bang and inflationary era, the expansion slowed down. Then, after about 7 billion years ago, the expansion began accelerating.



WHAT IS DARK ENERGY?

Dark energy can be thought of as ‘quintessence,’ or a fifth fundamental force following the known forces: gravity, electromagnetism, and the strong and weak nuclear forces. Possibilities include:

1. **SCALAR FIELD:** A scalar is a value that varies, or scales, in magnitude but it does not have a direction. Examples of scalars are mass and volume.
2. **CHAMELEON PARTICLES:** These hypothetical particles vary in mass according to the surrounding density of energy. On Earth, the particle would not be detectable. In the emptiness of intergalactic space, the particle would gain mass.

Does it exist?

- Since the 1990s, dark energy has been the most accepted premise to account for the accelerated expansion.
- As of 2021, there are active areas of cosmology research aimed at understanding the fundamental nature of dark energy.

Dark energy Vs Dark matter:

- Everything we see – the planets, moons, massive galaxies, you, me, this website – makes up less than 5% of the universe.
- About 27% is dark matter and 68% is dark energy.
- While dark matter attracts and holds galaxies together, dark energy repels and causes the expansion of our universe.

9. IIT-B develops One-time Programmable Memory

Why in News?

- IIT Bombay researchers have developed a “memory technology” that can, in principle, revolutionise Indian industry and the many applications that need semiconductor chips, such as in the defence sector, automobiles and future aspirations in cell phone manufacturing.

One-time Programmable Memory:

- Hard disks, flash memory, etc, are examples of memory technology.
- There is also another form of memory called the one-time programmable memory (OTP) where the memory is written once, stored for a lifetime, and retrieved and used many times.
- This finds varied uses, one of which is in correcting faulty chips that have been mass produced for specific applications.

Its utility:

- For instance, think of a chip that helps read off the temperature.
- Due to a manufacturing defect, the chip may read 100 degree Celsius as 101 degree Celsius.
- This “offset” of 1 degree may be corrected by storing the error correction parameter in the OTP memory.
- This is done uniquely for each chip and once stored, the memory corrects the chip’s output for its lifetime.

- OTP memories are also used for other purposes, mainly three: chip identity, secure information storage and chip calibration for error correction.

How does it work?

- To store the correction value, the researchers used eight memory cells, each of which would store one “bit” (that is a value of zero or one).
- Each of the memory cells consist of an ultrathin silicon dioxide layer which is 10-15 atomic layers thick.
- This is deposited uniformly over a dinner plate–sized eight-inch silicon wafer to form millions of nanoscale capacitors.
- The pristine silicon dioxide layer is insulating, passing a very low current [which in digital electronics is read as a “0”].
- A nanoscale lightning is generated of 3.3 volts to blow the capacitor, leading to a short circuit that produced high current [this is a “1”].
- Thus, the OTP memory remembers either the “0” state or “1” state through its lifetime.

Benefits offered:

- The group has successfully demonstrated CMOS 180-nanometre–based, production-ready, eight-bit memory technology.
- These include successful operation between minus 40 degrees C to 125 degrees C and reliability to ensure excess of 95% yield on eight-bit memories.

Significance:

- A large fraction of manufactured chips may need to be discarded for faults that can be corrected using this technology.
- This technology is the first indigenous semiconductor memory technology adoption to manufacturing at 180-nanometre node.
- Thus, this is a major national milestone for semiconductor innovation.

10. The Atlantic Niño’s role in India’s erratic monsoon

Why in News?

- Last month, farmers from Madhya Pradesh threatened to take IMD to court for the inaccurate monsoon forecast this year. A question was also raised in Parliament about whether the Arctic warming had led to an erratic monsoon this year.

Understanding the role of Atlantic Niño in monsoon prediction:

- Monsoon predictions are a monumental challenge, especially when it comes to the spatial distribution and the northward migration of the monsoon trough.
- Forecast models tend to rely heavily on El Niño for monsoon predictions.
- But only about 50 per cent of the dry years are explained by El Niño.
- Clearly, Atlantic Niño is a significant player in monsoon evolution and models and forecasters must pay attention to this Atlantic teleconnection.
- Atlantic Niño is El Niño's little cousin in the Atlantic, also known as the Atlantic Zonal Mode.
- Indian scientists from INCOIS have argued that the Atlantic Niño is in fact predictable up to three months in advance.
- Every few years, from June to August, there is a warming in the eastern equatorial Atlantic, which does not get as much attention as its big brother El Niño.
- The biggest rainfall deficits from the Atlantic Niño tend to occur over the Western Ghats and the core monsoon zone.

How Atlantic Niño plays a role if Indian and Atlantic Oceans are not connected?

- The Atlantic and Indian Oceans are not directly connected in the tropics via the ocean.
- The Atlantic Niño affects the monsoon by producing atmospheric waves, which propagate into the Indian Ocean.
- These waves affect air temperatures over the Indian Ocean and influence the land-ocean thermal contrast as well as Low Pressure Systems (LPS).

Way Forward:

- Overall, monsoon prediction skill has gone up in the IMD but even a 70 per cent accuracy means the forecasts will be wrong 30 per cent of the time.
- Many of the Atlantic Niños occur during non-El Niño years and this offers a window of opportunity to increase forecast skills based on the accurate prediction of the Atlantic Niño.
- No forecasts will ever be 100 per cent accurate. Climate scientists are also aware of the monsoon prediction challenge and they will continue to try to improve monsoon forecasts.

4. ECONOMY

1. Common Prosperity Drive in China

Why in News?

- Chinese President Xi Jinping has called for China to achieve “common prosperity”, seeking to narrow a yawning wealth gap that threatens the country’s economic ascent and the legitimacy of Communist Party rule.

What is ‘Common Prosperity’?

- “Common prosperity” was first mentioned in the 1950s by Mao Zedong, founding leader of what was then an impoverished country.
- The idea was repeated in the 1980s by Deng Xiaoping, who modernized an economy devastated by the Cultural Revolution.
- Deng said that allowing some people and regions to get rich first would speed up economic Growth and help achieve the ultimate goal of common prosperity.
- Common prosperity is not egalitarianism. It does not mean “killing the rich to help the poor”.

Components of the Drive:

- The push for common prosperity has encompassed wide range of policies,
- This includes curbing tax evasion and limits on the hours that tech sector employees can work to bans on for-profit tutoring in core school subjects and strict limits on the time minors can spend playing video games.

Why in News Now?

- China became an economic powerhouse under a hybrid policy of “socialism with Chinese characteristics”, but it also deepened inequality, especially between urban and rural areas, a divide that threatens social stability.
- This year, Xi has signalled a heightened commitment to delivering common prosperity, emphasizing it is not just an economic objective but core to the party’s governing foundation. A pilot programme in Zhejiang province, one of China’s wealthiest, is designed to narrow the income gap there by 2025.

How will it be Achieved?

- Chinese leaders have pledged to use taxation and other income redistribution levers to expand the proportion of middle-income citizens, boost incomes of the poor, “rationally adjust excessive incomes”, and ban illegal incomes.

- Beijing has explicitly encouraged high-income firms and individuals to contribute more to society via the so-called “third distribution”, which refers to charity and donations.
- Several tech industry heavyweights have announced major charitable donations and support for disaster relief efforts.
- Other measures would include improving public services and social safety net.

What will be the Economic Impact?

- Chinese leaders are likely to tread cautiously so as not to derail a private sector that has been a vital engine of growth and jobs.
- This goal may speed China’s economic rebalancing towards consumption-driven growth to reduce reliance on exports and investment, but policies could prove damaging to growth driven by private sector. Increasing incomes and improved public services, especially in rural areas, would be positive for consumption, and a better social safety net would lower precautionary savings. The effort supports Xi’s “dual circulation” strategy for economic development, under which China aims to spur domestic demand, innovation and self-reliance, propelled by tensions with the United States.

2. Govt Must constitute GST tribunal: SC

Why in News?

- The Supreme Court has warned that the government had no option but to constitute the Goods and Services Tax (GST) Appellate Tribunal.

What is GST Appellate Tribunal?

- The GST Appellate Tribunal (GSTAT) is the second appeal forum under GST for any dissatisfactory order passed by the First Appellate Authorities.
- The National Appellate Tribunal is also the first common forum to resolve disputes between the centre and the states.
- Being a common forum, it is the duty of the GST Appellate Tribunal to ensure uniformity in the redressal of disputes arising under GST.
- It holds the same powers as the court and is deemed Civil Court for trying a case.

Constitution of the GST Appellate Tribunal

- The GSTAT has the following structure:
 - ✓ **National Bench:** The National Appellate Tribunal is situated in New Delhi, constitutes a National President (Head) along with 2 Technical Members (1 from Centre and State each)

- ✓ **Regional Benches:** On the recommendations of the GST Council, the government can constitute (by notification) Regional Benches, as required. As of now, there are 3 Regional Benches (situated in Mumbai, Kolkata and Hyderabad) in India.
- ✓ State Bench and Area Bench

Why in News Now?

- The GST tribunal has not been constituted even four years after the central GST law was passed in 2016.
- Section 109 of the GST Act mandates the constitution of the Tribunal.
- Citizens aggrieved are constrained to approach respective High Court and the same was overburdening the work of the High Courts.

Goods and Services Tax

- The GST is a value-added tax levied on most goods and services sold for domestic consumption.
- It was launched into operation on the midnight of 1st July 2017.
- It subsumed almost all domestic indirect taxes (petroleum, alcoholic beverages and stamp duty are the major exceptions) under one head.
- The GST is paid by consumers, but it is remitted to the government by the businesses selling the goods and services. GST is levied at four rates viz. 5%, 12%, 18% and 28%. The schedule or list of items that would fall under these multiple slabs are worked out by the GST council.

Types:

- The GST to be levied by the Centre is called Central GST (CGST) and that to be levied by the States is called State GST (SGST).
- Import of goods or services would be treated as inter-state supplies and would be subject to Integrated Goods & Services Tax (IGST) in addition to the applicable customs duties.

The GST Council:

- It is a constitutional body (Article 279A) for making recommendations to the Union and State Government on issues related to GST.
- The GST Council is chaired by the Union Finance Minister and other members are the Union State Minister of Revenue or Finance and Ministers in charge of Finance or Taxation of all the States.
- It is considered as a federal body where both the centre and the states get due representation.

3. New Code for Creditors (CoC) under IBC

Why in News?

- The insolvency regulator has called for public comments on a proposal to introduce a code of conduct for Committees of Creditors (CoC), of companies undergoing insolvency proceedings under the Insolvency and Bankruptcy Code (IBC).

IBC:

- The IBC, 2016 is the bankruptcy law of India which seeks to consolidate the existing framework by creating a single law for insolvency and bankruptcy.
- It is a one-stop solution for resolving insolvencies which previously was a long process that did not offer an economically viable arrangement.
- The code aims to protect the interests of small investors and make the process of doing Business Less Cumbersome.

Key Features:

- **Insolvency Resolution:** The Code outlines separate insolvency resolution processes for individuals, companies, and partnership firms. The process may be initiated by either the debtor or the creditors. A maximum time limit, for completion of the insolvency resolution process, has been set for corporates and individuals.
- For companies, the process will have to be completed in 180 days, which may be extended by 90 days, if a majority of the creditors agree.
- For startups (other than partnership firms), small companies, and other companies (with assets less than Rs. 1 crore), the resolution process would be completed within 90 days of initiation of request which may be extended by 45 days.
- **Insolvency regulator:** The Code establishes the Insolvency and Bankruptcy Board of India, to oversee the insolvency proceedings in the country and regulate the entities registered under it. The Board will have 10 members, including representatives from the Ministries of Finance and Law, and the RBI.
- **Insolvency professionals:** The insolvency process will be managed by licensed professionals. These professionals will also control the assets of the debtor during the insolvency process.
- **Bankruptcy and Insolvency Adjudicator:** The Code proposes two separate tribunals to oversee the process of insolvency resolution, for individuals and companies:
- **National Company Law Tribunal:** for Companies and Limited Liability Partnership firms; and

- Debt Recovery Tribunal: for individuals and partnerships

Code of conduct for Committees of Creditors (CoC):

- A CoC is to be composed of financial creditors to the Corporate Debtor (CD) — or operational creditors in the absence of unrelated financial creditors.
- Under the IBC, CoC is empowered to take key decisions, including decisions on haircuts for creditors, that are binding on all stakeholders, including those dissenting.
- The CoC is also empowered to seek and choose the best resolution plan for a corporate debtor from the market, and its role is vital for a timely and successful resolution for a CD.
- The IBBI noted that a code of conduct for CoCs would promote transparent and fair working on the part of CoCs.

What are the issues that the code of conduct is seeking to address?

- Several cases in which certain lenders have withdrawn funds from a CD undergoing insolvency proceeding and contributed to delays in the insolvency process.
- Delays in resolution are seen as contributing to the loss of value in corporate debtors and have become a key criticism of the IBC, with over 75 percent of proceedings having crossed the 270-day timeline.
- The IBBI highlighted cases in which representatives of lenders have had to seek approval from seniors for decisions such as an appointment of resolution professionals.
- IBBI has recommended that a code of conduct require that members of the CoC nominate representatives with sufficient authorization to participate in meetings and make decisions during the process.
- The regulator also highlighted cases where lenders have withdrawn funds from a corporate debtor during insolvency or liquidation proceedings.

4. Container Shortage and its impact on International Trade

Why in News?

- The government is in talks with exporters to help them deal with an international container shortage that has led to freight rates rising by over 300 per cent in the past year for key shipping routes.

Why is there an International Container Shortage?

- The reduction in the number of shipping vessels operating as a result of the Covid-19 pandemic has led to fewer empty containers being picked up.

- This has left many containers in inland depots and stuck at ports for long durations.
- Long waiting times at key ports such as those in the US due to congestion are also contributing to lengthening turnaround time for containers.
- A sustained global economic recovery has added to the impetus to trade.
- Some countries are willing to pay a premium for empty containers and that this was further adding to the container shortage.

Freight rate impact:

- The lack of availability of containers and the faster than expected recovery in international trade has pushed up freight rates significantly over the past year.
- Some key international routes are seeing an increase in freight rates of over 500 per cent compared to September last year.
- Structural problems such as the high turnaround time for ships in India also add to the container shortage issue that exporters are currently facing.
- How is the container shortage impacting Indian exporters?
- **Delay:** Indian exporters are facing major delays in their shipments and consequent liquidity issues as they have to wait longer to receive payment for exported goods.
- **Liquidity crunch:** Exporters noted that shipments that used to take 45 days are now taking 75-90 days leading to a 2-3-month delay in payments leading to liquidity crunch particularly for small exporters.

How can the Government help Address this Issue?

- Exporters are calling on the government to regulate the export of empty containers.
- Exporters have asked the government to curb the export of empty containers at all Indian ports in line with a move by the Kolkata port which restricted the number of empty containers permitted to be exported to 100 per vessel for a three month period.
- Exporters are also calling on the government to release about 20,000 containers that have been abandoned or are detained by government agencies so that they can augment supply.
- Indian exporters has also called on the government to notify a freight support scheme for all exports till the end of the fiscal when freight rates are expected to normalise.
- They are also asking the government to push back on a move by shipping lines to offer priority bookings at higher rates, asking that shipping lines revert to taking bookings on a first come first serve basis.
- In the medium term, exporters have called on the government to take steps to boost the manufacturing of containers in India.

5. SEBI introduces T+1 Settlement System

Why in News?

- The Capital markets regulator Securities and Exchange Board of India (SEBI) has introduced T+1 settlement cycle for completion of share transactions on optional basis in a move to enhance market liquidity.



What is T+1 Settlement System?

- T+1 means that settlements will have to be cleared within one day of the actual transactions taking place.
- Currently, trades on the Indian stock exchanges are settled in two working days after the transaction is done (T+2).
- In April 2002, stock exchanges had introduced a T+3 rolling settlement cycle. This was shortened to T+2 from April 1, 2003.

What has Sebi allowed?

- SEBI has allowed stock exchanges to start the T+1 system as an option in place of T+2.
- If it opts for the T+1 settlement cycle for a scrip, the stock exchange will have to mandatorily continue with it for a minimum 6 months.
- Thereafter, if it intends to switch back to T+2, it will do so by giving one month's advance notice to the market.
- Any subsequent switch (from T+1 to T+2 or vice versa) will be subject to a minimum period.
- A stock exchange may choose to offer the T+1 settlement cycle on any of the scrips, after giving at least one month's advance notice to all stakeholders, including the public at large.

Why T+1 settlement?

- Reduced settlement time: A shortened cycle not only reduces settlement time but also reduces and frees up the capital required to collateralize that risk.
- Quick settlement: T+1 also reduces the number of outstanding unsettled trades at any instant, and thus decreases the unsettled exposure to Clearing Corporation by 50%.
- Speedy recovery of assets: The narrower the settlement cycle, the narrower the time window for a counterparty insolvency/bankruptcy to impact the settlement of a trade.
- Risk reduction: Systemic risk depends on the number of outstanding trades and concentration of risk at critical institutions such as clearing corporations, and becomes critical when the magnitude of outstanding transactions increases.

How does T+2 work?

- If an investor sells shares, settlement of the trade takes place in two working days (T+2).
- The broker who handles the trade will get the money, but will credit the amount in the investor's account only.
- In effect, the investor will get the money only after three days.
- In T+1, settlement of the trade takes place in one working day and the investor will get the money on the following day.
- The move to T+1 will not require large operational or technical changes by market participants, nor will it cause fragmentation and risk to the core clearance and settlement ecosystem.

Why are Foreign Investors Opposing it?

- Foreign investors operating from different geographies would face time zones, information flow process, and foreign exchange problems.
- Foreign investors will also find it difficult to hedge their net India exposure in dollar terms at the end of the day under the T+1 system.
- In 2020, SEBI had deferred the plan to halve the trade settlement cycle to one day (T+1) following opposition from foreign

6. GST Council may consider bringing petrol, diesel under GST

Why in News?

- The GST Council might consider taxing petrol, diesel and other petroleum products under the single national GST regime.

GST Council:

- The GST Council is a constitutional body that aims to bring together states and the Centre on a common platform for the nationwide rollout of the indirect tax reform.
- It is an apex member committee to modify, reconcile or to procure any law or regulation based on the context of goods and services tax in India. It dictates tax rate, tax exemption, the due date of forms, tax laws, and tax deadlines, keeping in mind special rates and provisions for some states. The predominant responsibility of the GST Council is to ensure to have one uniform tax rate for goods and services across the nation.

How is the GST Council structured?

- The GST is governed by the GST Council. Article 279 (1) of the amended Indian Constitution states that the GST Council has to be constituted by the President within 60 days of the commencement of Article 279A.
- According to the article, the GST Council will be a joint forum for the Centre and the States. It consists of the following members:
 - ✓ The Union Finance Minister will be the Chairperson
 - ✓ As a member, the Union Minister of State will be in charge of Revenue of Finance
 - ✓ The Minister in charge of finance or taxation or any other Minister nominated by each State government, as members.

Terms of Reference:

- Article 279A (4) specifies that the Council will make recommendations to the Union and the States on the important issues related to GST, such as the goods and services will be subject to or exempted from the Goods and Services Tax.
- They lay down GST laws, principles that govern the following:
 - ✓ Place of Supply
 - ✓ Threshold limits
 - ✓ GST rates on goods and services
 - ✓ Special rates for raising additional resources during a natural calamity or disaster
 - ✓ Special GST rates for certain States

Why bring Petro/Diesel under GST?

- GST is being thought to be a solution for the problem of near-record high petrol and diesel rates in the country, as it would end the cascading effect of tax on tax.
- The state VAT is being levied not just on the cost of production but also on the excise duty charged by the Centre on such output.

Why were they left out of GST?

- When a national GST subsumed central taxes such as excise duty and state levies like VAT on July 1, 2017, five petroleum goods – petrol, diesel, ATF, natural gas and crude oil – were kept out of its purview.
- This is because both central and state government finances relied heavily on taxes on these products. Since GST is a consumption-based tax, bringing petroleum under the regime would have meant states where these products are sold get the revenue and not the producer ones. Simply put, Uttar Pradesh and Bihar with their huge population and a resultant high consumption would get more revenues at the cost of states like Gujarat.

7. PLI Scheme for White Goods

Why in News?

- A total of 52 companies have filed their application with a committed investment of Rs 5,866 crore under the PLI scheme to incentivize the domestic manufacturing of components of White Goods.

What are White Goods?

- White goods refer to heavy consumer durables or large home appliances, which were traditionally available only in white.
- They include appliances such as washing machines, air conditioners, stoves, refrigerators, etc. The white goods industry in India is highly concentrated.

Why PLI Scheme for White Goods?

- Indian appliance and consumer electronics (ACE) market reached INR 76,400 crore (~\$10.93 bn) in 2019.
- Appliances and consumer electronics industry is expected to double to reach INR 1.48 lakh crore (~\$21.18 bn) by 2025.
- The PLI Scheme on White Goods is designed to create complete component ecosystem for Air Conditioners and LED Lights Industry in India and make India an integral part of the Global Supply Chains. Only manufacturing of components of ACs and LED Lights will be incentivized under the Scheme.

What is PLI Scheme?

- As the name suggests, the scheme provides incentives to companies for enhancing their domestic manufacturing apart from focusing on reducing import bills and improving the cost competitiveness of local goods.

- PLI scheme offers incentives on incremental sales for products manufactured in India.
- The scheme for respective sectors has to be implemented by the concerned ministries and departments.

Criteria laid for the Scheme:

- Eligibility criteria for businesses under the PLI scheme vary based on the sector approved under the scheme.
- For instance, the eligibility for telecom units is subject to the achievement of a minimum threshold of cumulative incremental investment and incremental sales of manufactured Goods. The minimum investment threshold for MSME is Rs 10 crore and Rs 100 crores for others. Under food processing, SMEs and others must hold over 50 per cent of the stock of their subsidiaries, if any.
- On the other hand, for businesses under pharmaceuticals, the project has to be a greenfield project while the net worth of the company should not be less than 30 per cent of the total Committed Investment.

What are the incentives offered?

- An incentive of 4-6 per cent was offered last year on mobile and electronic components manufacturers such as resistors, transistors, diodes, etc.
- Similarly, 10 percent incentives were offered for six years (FY22-27) of the scheme for the Food Processing Industry. For white goods too, the incentive of 4-6 per cent on incremental sales of goods manufactured in India for a period of five years was offered to companies engaged in the manufacturing of air conditioners and LED lights.

8. GST Council not for inclusion of Petroleum Products

Why in News?

- The Goods and Services Tax (GST) Council has decided to keep petroleum products out of the GST regime.

Present taxation of Fuels:

- Currently, taxes on petroleum products are levied by both the Centre and the states.
- While the Centre levies excise duty, states levy value added tax (VAT).
- For instance, VAT on petroleum products is as high as 40% in Maharashtra, contributing over ₹25,000 crore annually.
- By being able to levy VAT on these products, the state governments have control over their revenues.

Impact of inclusion of fuel under GST:

- If petroleum products are included under the GST, there will be a uniform price of fuel across the country.
- However, petroleum products coming under GST not necessarily means that taxes or prices will come down.
- If the GST council decides to opt for a lower slab, taxes may come down.
- At present, India has four primary GST rates – 5 percent, 12 percent, 18 percent and 28 percent.
- Levying a standard rate of GST on petrol would mean that the prices increase dramatically in Andaman and Nicobar, but on the flip side, they would fall in Maharashtra if the cumulative rate is lower than the current rate.

Key Takeaways from States VAT:

- Among the states, Rajasthan levies the highest tax across the country keeping VAT on petrol at 36 percent, followed by Telangana at 35.2 percent.
- Other states with more than 30 per cent VAT on petrol include Karnataka, Kerala, Assam, Andhra Pradesh, Delhi and Madhya Pradesh.
- On diesel, the highest VAT rates are charged by states like Odisha, Telangana, Rajasthan and Chhattisgarh.
- So far, five states, West Bengal, Rajasthan, Meghalaya, Assam and Nagaland have cut taxes on fuel this year.

9. Delhi-Mumbai Expressway: World's longest

Why in News?

- The Minister for Road Transport and Highways Union Minister Nitin Gadkari concluded the review of the work progress on the Delhi-Mumbai Expressway.

Delhi-Mumbai Expressway:

- The ambitious infra project started in the year 2018 is being constructed at a cost of Rs 98,000 crore and is scheduled for completion by March 2023.
- States: Delhi, Haryana, Rajasthan, Madhya Pradesh, Gujarat and Maharashtra



- Once ready, the expressway will feature a spur to Noida International Airport and Jawaharlal Nehru Port to Mumbai through a spur in the financial capital.
- It will reduce travel time between certain cities to 12-12.5 hours from 24 hours.
- The project is expected to improve connectivity to economic hubs of India like Jaipur, Ajmer, Kishangarh, Chittorgarh, Kota, Udaipur, Ujjain, Bhopal, Indore, Vadodara, Ahmedabad, and Surat.

Key Features of the expressway:

- The expressway which is eight-lane access-controlled can be expanded to a 12-lane expressway depending on the traffic volume
- It will boast wayside amenities such as resorts, food courts, restaurants, fuel stations, logistics parks, facilities for truckers
- For accident victims, it will offer a helicopter ambulance service as well as a heliport, which will use drone services for business. Along the highway, over two million trees and shrubs are planned to be planted.
- The highway project is Asia's first and the world's second to include animal overpasses in order to facilitate unrestricted wildlife movement
- Besides, it will also involve two iconic eight-lane tunnels
- The project will result in annual savings of more than 320 million litres of fuel as well as reduce Carbon dioxide emissions by 850 million kg
- Over 12 lakh tonnes of steel will be consumed in the project's construction, which is equivalent to constructing 50 Howrah bridges
- For the project, 80 lakh tonnes of cement will be consumed, which is around 2 percent of the country's annual cement production capacity
- The ambitious Delhi-Mumbai Expressway project has also created job opportunities for thousands of trained civil engineers apart from generating over 50 lakh man-days of work.

10. Rooftop Solar Scheme

Why in News?

- India has added 521 megawatts (MW) of rooftop solar capacity in the second quarter (Q2) of the calendar year (CY) 2021, a 53% increase than earlier quarter showing good signs of popularity.

What is Solar Rooftop?

- A solar photovoltaic (PV) system mounted on a rooftop of a building is a mini-power requirement or feed into the grid.
- The size of the installation varies significantly depending on the availability of space, amount of electricity consumed by the property and the ability or willingness of the owner to invest the capital required.

Why Rooftop?

- Rooftop solar with a storage system is a benefit for both, end consumers as well as discoms (power distribution companies).
- A one-kilowatt (kW) rooftop system can produce three to five units of electricity a day.
- The combination increasingly becomes cost-effective for electricity generation compared to the traditional grid supply and diesel generators.
- In 2021, solar and storage will be cheaper than grid supply for most commercial and industrial (C&I) customers.
- The increase in penetration of rooftop solar in the distribution grid will have a significant impact on the stability of the grid.

A Viable Alternative:

- Most housing societies in urban India rely on diesel generators for power backup. However, as power availability improves in the country, diesel generators will become redundant.
- The operational cost of diesel generators is quite high— R16-18 per unit against Rs 5-6 a unit for solar rooftop systems. So rooftop solar power makes financial sense. Solar rooftop is also a perfect solution for commercial and institutional buildings that operate mostly during the day.
- Their rooftops can be utilized to generate electricity, and they can, partially or completely, replace diesel generators. This would also help them reduce their electricity bills.

Question of energy storage:

- In order to integrate rooftop solar and electric vehicles, the grid needs to be flexible and smart.
- Energy storage systems will play a key role in providing this flexibility by acting as a load when there is a surplus generation, as well as generating sources when there is a supply shortage.
- There are two major methods of integrating battery storage into the electric grid:

- **Front-of-the-meter (FTM):** It is implemented at the utility scale, wherein the battery system is connected to the transmission or distribution network that ensures grid reliability. This happens on a considerably large scale (~MWh scale).
- **Behind-the-meter (BTM):** The other method is implemented at the residential and commercial/industrial level, mainly to provide backup during a power failure or to store excess locally generated energy from solar rooftop photovoltaic (PV) systems.

India's Storage Capacity:

- About 34 GW / 136 GWh of battery storage is expected to be installed by 2030, according to the Central Electricity Authority of India.
- This capacity would be used for RE integration, demand-side and peak load management services.

Storage challenges:

- The solar segment offers a huge market opportunity for advanced battery technologies.
- However, manufacturers have some ground to cover in addressing technical limitations of batteries, such as charging characteristics, thermal performance and requirement of boost current to charge deep Cycle Batteries. Since solar companies may directly procure batteries from manufacturers and require after-sale services and technical support, battery companies should have wider a presence to address these expectations.

Other Key Challenges:

- Rooftop solar source doesn't match the rise in renewable energy in India.
- While industrial and commercial consumers account for 70% of total installed capacity residential consumers remain a big untapped potential to give the boost
- Solar rooftops also face several challenges such as little consumer awareness, lack of innovative government policies or attention, bureaucratic hassles, and limited support from Discoms.

11. Cartel

Why in News?

- Last week, the Competition Commission of India (CCI) has slapped a penalty on a cartel of beer companies for hiking the prices.

What is a Cartel?

- According to CCI, a "Cartel includes an association of producers, sellers, distributors, traders or service providers who, by agreement amongst themselves, limit, control or

attempt to control the production, distribution, sale or price of, or, trade in goods or provision of services”.

- The International Competition Network, which is a global body dedicated to enforcing competition law, has a simpler definition.
- The three common components of a cartel are:
 - ✓ an Agreement
 - ✓ between Competitors
 - ✓ to restrict Competition

What is Cartelization?

- Cartelization is when enterprises collude to fix prices, indulge in bid rigging, or share customers, etc.
- But when prices are controlled by the government under a law, that is not cartelization.
- The Competition Act contains strong provisions against cartels.
- It also has the leniency provision to incentivise a party to a cartel to break away and report to the Commission, and thereby expect total or partial leniency.
- This has proved a highly effective tool against cartels worldwide.
- Cartels almost invariably involve secret conspiracies.

How do they Work?

- According to ICN, four categories of conduct are commonly identified across jurisdictions (countries). These are:
 - ✓ Price-fixing
 - ✓ Output restrictions
 - ✓ Market allocation and
 - ✓ Bid-rigging
- In sum, participants in hard-core cartels agree to insulate themselves from the rigours of a competitive marketplace, substituting cooperation for competition.

How do cartels hurt?

- While it may be difficult to accurately quantify the ill-effects of cartels, they not only directly hurt the consumers but also, indirectly, undermine overall economic efficiency and innovations.
- A successful cartel raises the price above the competitive level and reduces output.

- Consumers choose either not to pay the higher price for some or all of the cartelised product that they desire, thus forgoing the product, or they pay the cartel price and thereby unknowingly transfer wealth to the cartel operators.

Are there provisions in the Competition Act against Monopolistic Prices?

- There are provisions in the Competition Act against abuse of dominance.
- One of the abuses is when a dominant enterprise “directly or indirectly imposes unfair or discriminatory prices” in purchase or sale of goods or services.
- Thus, excessive pricing by a dominant enterprise could, in certain conditions, be regarded as an abuse and, therefore, subject to investigation by the Competition Commission if it were fully functional.
- However, it should be understood that where pricing is a result of normal supply and demand, the Competition Commission may have no role.

How might cartels be worse than Monopolies?

- It is generally well understood that monopolies are bad for both individual consumer interest as well as the society at large.
- That’s because a monopolist completely dominates the concerned market and, more often than not, abuses this dominance either in the form of charging higher than warranted prices or by providing lower than the warranted quality of the good or service in question.

How to stop the Spread of Cartelisation?

- Cartels are not easy to detect and identify.
- As such, experts often suggest providing a strong deterrence to those cartels that are found guilty of being one.
- Typically, this takes the form of a monetary penalty that exceeds the gains amassed by the cartel.
- However, it must also be pointed out that it is not always easy to ascertain the exact gains from cartelisation.
- In fact, the threat of stringent penalties can be used in conjunction with providing leniency — as was done in the beer case.

5. GEOGRAPHY & ENVIRONMENT

1. India must commit to net zero emissions

Why in News?

- The United Nations Climate Change Conference (COP26) in November in Glasgow is shaping up to be the most important climate meeting since the Paris Agreement in 2015.

Increase in Pace and Scale of Climate Action:

- Over 50% of the global economy already committed to net zero emissions by 2050.
- Over 100 countries have already committed to net zero emissions by 2050, with more expected at COP26.
- The pace and scale of climate action is only set to increase, with the recent IPCC report unequivocal on the need for urgent and stronger responses.
- It is not only governments that are increasing climate action.
- The business world is too, not just to protect themselves against the risks of climate change but also to take advantage of the massive opportunities arising as the global economy shifts to net zero emissions.

Why India should Commit to net-zero Target:

- National interest due to vulnerability: India itself has a national interest in ambitious Global and National Climate action.
- It is among the most vulnerable countries to climate change and, therefore, should be among the more active against the threats.
- Influence as a rising power: Second, as a rising power, India naturally seeks stronger influence globally.
- Being an outlier on the global challenge facing our generation does not support this aim.
- Drag on international diplomacy: India's reluctance to commit to net-zero will become a significant drag on India's international diplomacy.
- This applies not just to key relationships like with the U.S., but also with much of the Group of 77 (G77) states, who are increasingly concerned to see climate action, and in multilateral groupings such as the United Nations and ASEAN-APEC.
- Interconnected with the economy: There is no longer a trade-off between reducing emissions and economic growth.
- For example, the U.K. has reduced emissions over 40% and grown its economy over 70% since 1990.

- Solar energy costs have fallen 90% in recent years, providing the cheapest electricity in India ever seen.
- Also, given the negative impacts, addressing climate change in India's economic development is now central to success, not an added luxury to consider.
- The transition of the global economy to net zero emissions is the biggest commercial opportunity in history.
- In just the energy sector alone, an estimated \$1.6 to \$3.8 trillion of investment is required every year until 2050.

India's Climate Actions:

- India is set to significantly exceed its Paris Agreement commitment of reducing the emissions intensity of its GDP by 33-35% below 2005 levels by 2030.
- Emphasis on renewable: India is impressing the world with its leading roll-out of renewable energy and target for 450GW by 2030, linked to its leadership on the International Solar Alliance and recent national hydrogen strategy.
- Corporates: Indian corporates are also stepping up, with the Tata Group winning awards on sustainability, Mahindra committing to net zero by 2040 and Reliance by 2035.
- Notwithstanding reasonable arguments about historical responsibility, per capita emissions and equity, India's national interests on climate action are now engaged in ways that go significantly beyond waiting for donor support to drive ambition.

International Cooperation:

- World needs to work together for success in the form of stronger political engagement, policy support in areas of mutual challenge such as energy policy, carbon markets and economic recovery.
- Practical support and cooperation in areas like renewable energy and integrating it with the national grid, zero emissions transport, decarbonizing hard to abate sectors like steel, cement and chemicals and Decarbonizing Agriculture offer significant scope to raise Ambition.
- As does working with India on innovative Green Financing for decarbonizing investment.

2. Dinosaur Footprints found in Thar desert

Why in News?

- In a major discovery, footprints of three species of dinosaurs have been found in the Thar desert in Rajasthan's Jaisalmer district.

Details of the Footprints:

- The footprints, made in the sediment or silt of the seashore, later become permanently stone-like.
- They belong to three species of dinosaurs — Eubrontes cf. giganteus, Eubrontes glenrosensis and Grallator tenuis.
- While the giganteus and glenrosensis species have 35 cm footprints, the footprint of the third species was found to be 5.5 cm.
- The dinosaur species are considered to be of the theropod type, with the distinguishing features of hollow bones and feet with three digits.
- All three species, belonging to the early Jurassic period, were carnivorous.
- Eubrontes could have been 12 to 15 metres long and weighed between 500 kg and 700 kg, while the height of the Grallator is estimated to have been two metres, as much as a human, with a length of up to three metres.

Key Findings:

- The discovery of dinosaur footprints prove the presence of the giant reptiles in the western part of the State, which formed the seashore to the Tethys Ocean during the Mesozoic era.
- Careful geological observations enabled the scientists to interpret ancient environments in which the rocks of the footprints, which were once soft sediments, were deposited.
- Geochemical Analyses and calculation of weathering indices showed that the hinterland climate was seasonal to semi-arid during the deposition of the footprints.
- Fieldwork in the Kutch and Jaisalmer basins has suggested that after the main transgression during the early Jurassic period, the sea level changed several times.
- Spatial and temporal distribution of sediments and traces of fossils and post-depositional structures provided an indication to this phenomenon.

Significance:

- These trace fossils are significant to ascertain how life started and evolved after the mass extinction of species, including dinosaurs, at the end of the cretaceous period around 65 million years ago.

- This research also illustrates the evidence of a fluvial freshwater palaeo-environment and tropical palaeo-climate, indicating the presence of a tropical forest and a huge network of rivers.

3. Need for rethink the hydel projects in Ganga-Himalayan basin

Why in News?

- The affidavit filed recently by the Ministry of Environment, Forest and Climate Change (MoEFCC) in an ongoing matter in the Supreme Court of India has recommended the construction of seven partially constructed hydroelectric projects in the Uttarakhand Himalaya.

Background:

- After the Kedarnath tragedy of 2013, an expert body (EB-I) was constituted to investigate whether the hydro-power projects in the State of Uttarakhand was linked to the disaster.
- In its findings, EB-I said there was a “direct and indirect impact” of these dams in aggravating the disaster.
- The Ministry formed another expert body (EB-II; B.P. Das committee) whose mandate has been to pave the way for all projects through some design change modifications
- This affidavit, dated August 17, reveals that the government is inclined towards construction of 26 other projects, as in the recommendation of the expert body (EB-II; B.P. Das committee).
- Ministry’s own observations and admissions given in its earlier affidavit dated May 5, 2014 admitted that hydroelectric projects did aggravate the 2013 flood.

Concerns:

- Sustainability: The sustainability of the dams in the long term is highly questionable as hydropower solely relies on the excess availability of water.
- Temperatures across the region are projected to rise by about 1°C to 2°C on average by 2050.
- Retreating glaciers and the alternating phases of floods and drought will impact the seasonal flows of rivers.
- Sediment hotspots: The most crucial aspect is the existence of sediment hotspot paraglacial zones, which at the time of a cloud burst, contribute huge amounts of debris and silt in the river.

- The flash floods in these Himalayan valleys do not carry water alone; they also carry a massive quantity of debris.
- This was pointed out by EB-II alongside its recommendation not build any projects beyond 2,000 metres or north of the MCT, or the Main Central Thrust (it is a major geological fault).
- **Externalities:** Though hydropower is renewable source, there are contentious externalities associated with the construction of dams such as social displacement, ecological impacts, environmental and technological risks.
- Climate change: these projects exacerbate ecological vulnerability, in a region that is already in a precarious state.
- The intense anthropogenic activities associated with the proliferation of hydroelectric projects in these precarious regions accelerate the intensity of flash floods, avalanches, and landslides. Failure of mountain slopes: The construction and maintenance of an extensive network of underground tunnels carrying water to the powerhouses contribute to the failure of mountain slopes.
- Aggravating the disaster: The Rishi Ganga tragedy and the disasters of 2012 (flashfloods), 2013 are examples of how hydroelectric projects which come in the way of high-velocity flows aggravate a disaster and should be treated as a warning against such projects.
- Considering the environmental and cultural significance of these areas, it is imperative that the Government refrains from the construction of hydroelectric projects and declares the upper reaches of all the headstreams of the Ganga as eco-sensitive zones. It must allow the river to flow unfettered and free.

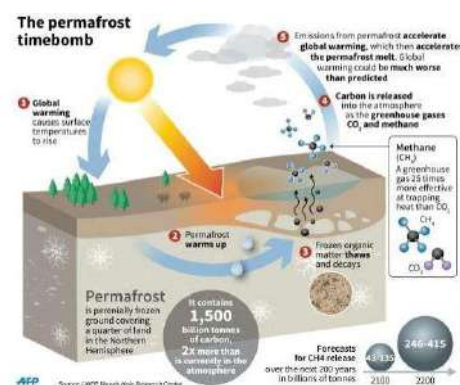
4. Can Thawing Permafrost cause another pandemic?

Why in News?

- The latest IPCC report has warned that increasing global warming will result in reductions in Arctic permafrost and the thawing of the ground is expected to release greenhouse gases like methane and carbon dioxide.

What is Permafrost?

- ‘Permafrost’ or permanently frozen ground is land that has been frozen at or below 0 degrees Celsius for two or more consecutive years.



- A staggering 17 per cent of Earth's entire exposed land surface is comprised of permafrost.
- Composed of rock, sediments, dead plant and animal matter, soil, and varying degrees of ice, permafrost is mainly found near the poles, covering parts of Greenland, Alaska, Northern Canada, Siberia and Scandinavia.
- The Arctic region is a vast ocean, covered by thick ice on the surface (called sea ice), surrounded by land masses that are also covered with snow and ice.

Permafrost thawing:

- When permafrost thaws, water from the melted ice makes its way to the caves along with Ground Sediments, and deposits on the rocks.
- In other words, when permafrost thaws, the rocks grow and when permafrost is stable and frozen, they do not grow.

Why Thawing?

- The link between the Siberian permafrost and Arctic Sea ice can be explained by two factors:
- One is heat transport from the open Arctic Ocean into Siberia, making the Siberian Climate Warmer.
- The second is moisture transport from open seawater into Siberia, leading to thicker snow cover that insulates the ground from cold winter air, contributing to its warming.
- This is drastically different from the situation just a couple of decades ago when the sea ice acted as a protective layer, maintaining cold temperatures in the region and shielding the permafrost from the moisture from the ocean.
- If sea ice (in the summer) is gone, permafrost start thawing.

Impact on Climate Change

- Due to relentlessly rising temperatures in the region, since the late-twentieth century, the Arctic Sea ice and surrounding land ice are melting at accelerating rates.
- When permafrost thaws due to rising temperatures, the microbes in the soil decompose the dead organic matter (plants and animals) to produce methane (CH₄) and carbon dioxide (CO₂), both potent greenhouse gases.
- CH₄ is at least 80 times more powerful than CO₂ on a decadal timescale and around 25 times more powerful on a century timescale.
- The greenhouse gases produced from thawing permafrost will further increase temperatures which will, in turn, lead to more permafrost thawing, forming an unstoppable and irreversible self-reinforcing feedback loop.

- Experts believe this process may have already begun. Giant craters and ponds of water (called ‘thermokarst lakes’) formed due to thawing have been recorded in the Arctic region. Some are so big that they can be seen from space.

Why a Matter of Concern?

- An estimated 1,700 billion tonnes — twice the amount currently present in the atmosphere — of carbon is locked in all of the world’s permafrost.
- Even if half of that were to be released to the atmosphere, it would be game over for the climate.
- Scientific estimates suggest that the Arctic Ocean could be largely sea ice-free in the summer months by as early as 2030, based on observational trends, or as late as 2050, based on climate model projections.

Potential to cause Another Pandemic:

- When the permafrost was formed thousands of years ago, there weren’t many humans who lived in that region which was necessarily very cold.
- Researchers recently found mammoths in the permafrost in Russia.
- And some of these mammoth carcasses when they begin to degrade again may reveal bacteria that were frozen thousands of years ago.
- So there will be surprises. But whether they will be lethal surprises is just not possible to say.

5. Pilibhit Tiger Reserve

Why in News?

- A herd of around 25 elephants from Nepal’s Shuklaphanta National Park reached the tiger reserve in Uttar Pradesh almost a month back.

Pilibhit Tiger Reserve:

- Pilibhit Tiger Reserve is located in Pilibhit district of Uttar Pradesh and was notified as a tiger reserve in 2014.
- It is one of the few well-forested districts in Uttar Pradesh.
- It forms part of the Terai Arc Landscape in the upper Gangetic Plain along the India-Nepal border.
- The habitat is characterized by sal forests, tall grasslands and swamp maintained by periodic flooding from rivers.

- The Sharda Sagar Dam extending up to a length of 22 km is on the boundary of the reserve.
- The tiger reserve got the first international award TX2 for doubling the tiger population in a stipulated time.

6. Kovalam & Eden Beaches gets Blue Flag Certification

Why in News?

- The international eco-label “Blue Flag”, has accorded the Blue Flag Certification for 2 new beaches this year –Kovalam in Tamil Nadu and Eden in Puducherry beaches.
- With this India now has 10 International Blue Flag beaches.

Which are the other 8 beaches?

- Shivrajpur (Dwarka-Gujarat)
- Ghoghla (Diu)
- Kasarkod (Karnataka) [NOT Kasargod which is in Kerala] and
- Padubidri (Karnataka)
- Kappad (Kerala)
- Rushikonda (AP)
- Golden Beach (Odisha) and
- Radhanagar (A&N Islands)
- Blue Flag Beaches



- The ‘Blue Flag’ beach is an ‘eco-tourism model’ and marks out beaches as providing tourists and beachgoers clean and hygienic bathing water, facilities/amenities, a safe and healthy environment, and sustainable development of the area.
- The certification is accorded by the Denmark-based Foundation for Environment Education.
- It started in France in 1985 and has been implemented in Europe since 1987, and in areas outside Europe since 2001 when South Africa joined.

- It has 33 stringent criteria under four major heads for the beaches, that is, (i) Environmental Education and Information (ii) Bathing Water Quality (iii) Environment Management and Conservation and (iv) Safety and Services.

7. Rhino Horn Reverification Exercises

Why in News?

- Assam will mark World Rhino Day — September 22 — with a special ceremony by burning a stockpile of nearly 2,500 horns of the one-horned rhinoceros.

Rhino Horn Reverification:

- The public ceremony — scheduled at Bokakhat in Kaziranga National Park (KNP) has been publicized as a “milestone towards rhino conservation” aimed at “busting myths about rhino horns”.
- It’s a loud and clear message to the poachers and smugglers that such items have no value.
- Thus the case for the destruction of horns — a process that is in compliance with Section 39(3)(c) of the Wildlife (Protection) Act of 1972.

Why are Rhinos poached for horns?

- Ground rhino horn is used in traditional Chinese medicine to cure a range of ailments, from cancer to hangovers, and also as an aphrodisiac.
- In Vietnam, possessing a rhino horn is considered a status symbol.
- Due to demand in these countries, poaching pressure on rhinos is ever persistent against which one cannot let the guard down.

Indian Rhino:

- The Indian rhinoceros also called the greater one-horned rhinoceros and great Indian rhinoceros is a rhinoceros native to the Indian subcontinent.
- It is listed as Vulnerable on the IUCN Red List and Schedule I animal in the Wildlife Protection Act, 1972.
- It once ranged across the entire northern part of the Indian Subcontinent, along the Indus, Ganges and Brahmaputra River basins, from Pakistan to the Indian-Myanmar border.
- Poaching for rhinoceros horn became the single most important reason for the decline of the Indian rhino.

6. INTERNATIONAL RELATIONS

1. China-Myanmar New Passage

Why in News?

- The shipments on a newly-launched railway line under the China-Myanmar New Passage from the Myanmar border to the key commercial hub of Chengdu in western China has started.



China-Myanmar New Passage:

- The passage provides China a new road-rail transportation channel to the Indian Ocean, were delivered last week, state media reported on Tuesday.
- The transport corridor involves a sea-road-rail link.
- It connects the logistics lines of Singapore, Myanmar and China, and is currently the most convenient land and sea channel linking the Indian Ocean with southwest China.
- Goods from Singapore reached Yangon Port, arriving by ship through the Andaman Sea of the northeastern Indian Ocean, and were then transported by road to Lincang on the Chinese side of the Myanmar-China border in Yunnan province.
- The new railway line that runs from the border town of Lincang to Chengdu, a key trade hub in western China, completes the corridor.

Why does India need to be watchful?

- From the perspective of security, India's border with Myanmar has historically presented serious security challenges. Chinese troops had used the Myanmar route to threaten India's the North-eastern States prior to the 1962 war.
- In the run-up to the India-China war of 1962, Chinese troops had commissioned local muleteers in Northern Myanmar to facilitate the movement of troops and war logistics to challenge India's Northeast.

Way forward:

- The work on infrastructure projects in India's the Northeastern States needs to be expedited to ensure speedy mobilization of India's own troops to face different contingencies.
- Monitoring of developments including deployment of space assets to ensure that India is not caught unaware would be desirable.

- Most importantly, India on its part needs to substantially step up its own game in Myanmar and proactively engage Myanmar in the realm of the infrastructure upgrade.

2. China's new Maritime Law

Why in News?

- China's new maritime rules designed to control the entry of foreign vessels in what Beijing calls "Chinese territorial waters" take effect.



graphic by Lindsey Burrows

What is the New Maritime Law?

- Foreign vessels, both military and commercial, will be henceforth required to submit to Chinese supervision in "Chinese territorial waters," as per the new law.
- Operators of submersibles, nuclear vessels, ships carrying radioactive materials and ships carrying bulk oil, chemicals, liquefied gas and other toxic and harmful substances are required to report their detailed information upon their visits to Chinese territorial waters.
- Vessels that "endanger the maritime traffic safety of China" will be required to report their name, call sign, current position and next port of call and estimated time of arrival.
- The name of shipborne dangerous goods and cargo deadweight will also be required.

Impact of the move:

- The move is expected to have far-reaching consequences for passage of vessels, both commercial and military, in the disputed South China Sea, East China Sea and Taiwan Strait.
- It is likely to escalate the existing tension with the US and its neighbors in the region.

Why is this Important?

- South China Sea: The South China Sea, which lies between China, Taiwan, the Philippines, Brunei, Malaysia, Indonesia and Vietnam, is of great economic importance globally.
- Shipping: Nearly one-third of the world's shipping passes through its lanes, and the waters house numerous important fisheries.

Significance for India:

- South China Sea is a critical route for India, both militarily and commercially.
- It plays a vital role in facilitating India's trade with Japan, South Korea and ASEAN countries, and assists in the efficient procurement of energy supplies.
- More than 55% of India's trade passes through the South China Sea and Malacca Straits.
- India is also involved in oil and gas exploration in offshore blocks in the margins of the Sea, which has led to standoffs with Chinese authorities.

The Actual Row:

- The waters around China are hotly contested.
- Under a "nine-dash line" map, China claims most of the South China Sea as its sovereign territory. This claim is contested by its neighbors in the region and by the United States, which, though it has no claim in the Sea, backs the smaller nations in the fight against Chinese overreach.

International position:

- Currently, international maritime activities are governed by an international agreement called the United Nations Convention on the Law of the Sea (UNCLOS).
- China, India and over a hundred other countries are signatories of UNCLOS (the US, significantly, is not).
- Accordingly, states have the right to implement territorial rights up to 12 nautical miles into the sea.
- The UNCLOS also states that all vessels have the right of "innocent passage" through this region – China's new law violates this.

3. Sri Lanka declares Economic Emergency

Why in News?

- Sri Lankan President has declared an economic emergency to contain soaring inflation after a steep fall in the value of the country's currency caused a spike in food prices.

Sri Lankan Economic Emergency:

- President Rajapaksa declared the state of emergency under the public security ordinance to prevent the hoarding of essential items, including rice and sugar.
- The government has appointed a former army general as commissioner of essential services, who will have the power to seize food stocks held by traders and retailers and regulate their prices.
- The military will oversee the action which gives power to officials to ensure that essential items, including rice and sugar, are sold at government-guaranteed prices or prices based on import costs at customs and prevent hiding of stocks.
- The emergency move followed sharp price rises for sugar, rice, onions and potatoes, while long queues have formed outside stores because of shortages of milk powder, kerosene oil and Cooking Gas.
- The wide-ranging measure is also aimed at recovering credit owed to State banks by importers.

Why came such an Emergency?

- Sri Lanka, a net importer of food and other commodities, is witnessing a surge in COVID-19 cases and deaths which has hit tourism, one of its main foreign currency earners.
- Partly as a result of the slump in tourist numbers, Sri Lanka's economy shrank by a record 3.6% last year.
- The Sri Lankan rupee has fallen by 7.5% against the US dollar this year.
- The Central Bank of Sri Lanka recently increased interest rates in a bid to shore up the local currency.
- According to bank data, Sri Lanka's foreign reserves fell to \$2.8 billion at the end of July, from \$7.5 billion in November 2019.

Financial Emergency in India:

- The President of India can declare the Financial Emergency on the aid and advise of the Council of Ministers.

- She/ He has to be satisfied that a situation has arisen due to which the financial stability or credit of India or any part of its territory is threatened.
- Article 360 gives authority to the President of India to declare a financial emergency.
- However, the 44th Constitutional Amendment Act of 1978 says that the President's 'satisfaction' is not beyond judicial review.
- It means the Supreme Court can review the declaration of a Financial Emergency.

Parliamentary Approval and Duration:

- A proclamation of financial emergency must be approved by both the Houses of Parliament within two months from the date of its issue.
- A resolution approving the proclamation of financial emergency can be passed by either House of Parliament (Lok Sabha or Rajya Sabha) only by a simple majority.
- Once approved by both the Houses of Parliament, the Financial Emergency continues indefinitely till it is revoked.
- It may be revoked by the President anytime without any Parliamentary approval (but with the usual aid and advise).

Effects of Financial Emergency:

- During the financial emergency, the executive authority of the Center expands and it can give financial orders to any state according to its own.
- All money bills or other financial bills, that come up for the President's consideration after being passed by the state legislature, can be reserved.
- Salaries and allowances of all or any class of persons serving in the state can be reduced.
- The President may issue directions for the reduction of salaries and allowances of: (i) All or any class of persons serving the Union and the judges of the Supreme Court and the High Court.

4. Durand Line

Why in News?

- With the Taliban's seize of Kabul, a huge exodus of Afghan refugees and asylum seekers is outpouring into Pakistan along the Durand Line.

Durand Line:

- The Durand Line is a legacy of the 19th century Great Game between the Russian and British empires in which Afghanistan was used as a buffer by the British against a feared Russian expansionism to its east.



- The agreement demarcating what became known as the Durand Line was signed on November 12, 1893 between the British civil servant Henry Mortimer Durand and Amir Abdur Rahman, then the Afghan ruler.
- Abdur Rahman became king in 1880, two years after the end of the Second Afghan War in which the British took control of several areas that were part of the Afghan kingdom.
- He was essentially a British puppet.
- His agreement with Durand demarcated the limits of his and British India's "spheres of influence" on the Afghan "frontier" with India.
- The line stretches from the border with China to Afghanistan's border with Iran.

An Illogical Separation:

- In reality, the line cut through Pashtun tribal areas, leaving villages, families, and land divided between the two "spheres of influence".
- It has been described as a "line of hatred", arbitrary, illogical, cruel and a trickery on the Pashtuns.
- Some historians believe it was a ploy to divide the Pashtuns so that the British could keep control over them easily.
- It also put on the British side the strategic Khyber Pass.

Cross-border tensions at Durand Line:

- With independence in 1947, Pakistan inherited the Durand Line, and with it also the Pashtun rejection of the line, and Afghanistan's refusal to recognize it.
- Afghanistan was the only country to vote against Pakistan joining the United Nations in 1947.
- 'Pashtunistan' — an independent country of the Pashtuns — was a demand made by Khan Abdul Ghaffar Khan at the time of Partition, although he later resigned himself to the reality of Partition.
- The proximity of the 'Frontier Gandhi' to India was a point of tension between the two countries almost immediately.
- The fear of Indian support to Pashtun nationalism haunts Pakistan to date, and is embedded in its Afghan policy.

Pakistani support against the Pashtuns:

- Pakistan's creation and support for the Taliban is seen by some as a move to obliterate ethnic Pashtun nationalism with an Islamic identity.
- But it did not work out the way Pakistan had planned.

- When the Taliban seized power in Kabul the first time, they rejected the Durand Line.
- They also strengthened Pashtun identity with an Islamic radicalism to produce the Tehreek-e-Taliban Pakistan, whose terrorist attacks since 2007 left the country shaken.

5. Havana Syndrome

Why in News?

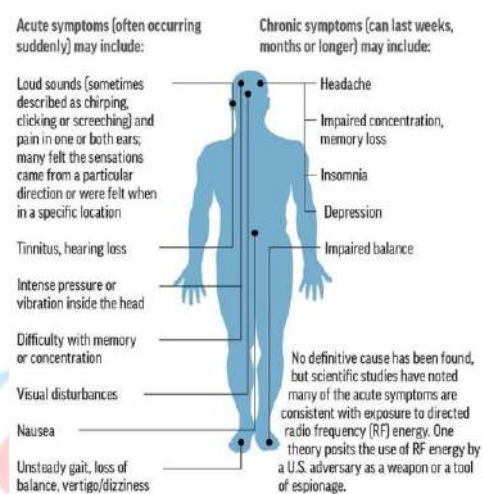
- A US intelligence officer traveling with CIA director William Burns has reported symptoms of Havana Syndrome.

What is Havana Syndrome?

- Havana Syndrome refers to a set of mental health symptoms that are said to be experienced by US intelligence and embassy officials in various countries.
- It typically involves symptoms such as hearing certain sounds without any outside noise being present, nausea, vertigo and headaches, memory loss and issues with balance.
- As the name suggests, it traces its roots to Cuba.
- In late 2016, US officials in embassy began experiencing sudden bursts of pressure in their brain followed by persistent headaches, feeling of disorientation and insomnia.

What is Havana syndrome?

The medical mystery named for the Cuban city where U.S. diplomats first experienced sudden, debilitating symptoms in 2016 has been reported by Americans serving in several other countries.



Source: National Academy of Sciences

AP

How severe is it?

- In 2018, at least three CIA officers working under diplomatic cover in Cuba had reported troubling sensations that seemed to leave serious injuries.
- Some officers are being compulsorily retired for their inability to coherently discharge his duty and another needing a hearing aid.

Has Havana Syndrome been reported anywhere else?

- Since the Cuban incident, American intelligence and foreign affairs officials posted in various countries have reported symptoms of the syndrome.
- In early 2018, similar accusations began to be made by US diplomats in China.
- The US media has reported around 130 such attacks across the world including at Moscow in Russia, Poland, Georgia, Taiwan, Colombia, Kyrgyzstan, Uzbekistan, and Austria, among others.

What are the causes of Havana Syndrome?

- No one is entirely sure. But it is speculated to be a “sonic attack”.
- Medical examination of the victims began to suggest that the victims may have been subjected to high-powered microwaves that either damaged or interfered with the nervous system.
- It was said to have built a pressure inside the brain that generated the feeling of a sound being heard.
- Greater exposure to high-powered microwaves is said not only to interfere with the body’s sense of balance but also impact memory and cause permanent brain damage.
- It is suspected that beams of high-powered microwaves are sent through a special gadget that Americans have begun calling “microwave weapon”.

Who is doing this in India?

- Sources in the Indian security establishment say they are not aware of any such weapon being in the possession of an Indian agency.
- Even if there was one, it is unlikely the government would admit to having acquired such counter-espionage technology given the sensitive nature of intelligence work.

6. Illicit Proliferation of networks of N-weapons

Why in News?

- India has underlined the need for the international community to pay closer attention to the “illicit proliferation” of networks of nuclear weapons, their delivery systems, components and relevant technologies.

Key Takeaways from India’s Remarks:

- India’s remarks appeared to be a veiled reference to China and its “all-weather ally” Pakistan.
- China’s nuclear cooperation with Pakistan was in contravention with the Nuclear Suppliers Group (NSG).
- Several concerns have been raised over the export of nuclear materials to Islamabad by Beijing and that they are in violation of international norms and established procedures.

Issues in Nuclear Disarmament:

- Notion of Nuclear ‘Haves’ and ‘Have-Nots’: The proponents of disarmaments are themselves nuclear armed countries thus creating a nuclear monopoly.

- Concept of Peaceful Nuclear Explosion (PNE): conducted for non-military purposes such as mining.

India's Commitment for de-nuclearization:

- India has always batted for a universal commitment and an agreed global and non-discriminatory multilateral framework.
- It has outlined a working paper on Nuclear Disarmament submitted to the UN General Assembly in 2006.
- India participated in the Nuclear Security Summit process and has regularly participated in the International Conferences on Nuclear Security organised by the International Atomic Energy Agency (IAEA).
- India is also a member of the Nuclear Security Contact Group (but has signed off the Nuclear Non-Proliferation Treaty (NPT)).
- India has expressed its readiness to support the commencement of negotiations on a Fissile Material Cut-off Treaty (FMCT).
- India couldn't join the Comprehensive Nuclear-Test-Ban Treaty (CTBT) due to several concerns raised by India.
- India has piloted an annual UNGA Resolution on "Measures to Prevent Terrorists from Acquiring Weapons of Mass Destruction" since 2002, which is adopted by consensus.

Why didn't India join NPT?

- India is one of the only five countries that either did not sign the NPT or signed but withdrew, thus becoming part of a list that includes Pakistan, Israel, North Korea, and South Sudan.
- India always considered the NPT as discriminatory and had refused to sign it.
- India maintains that they are selectively applicable to the non-nuclear powers and legitimized the monopoly of the five nuclear weapons powers.

Way Forward:

- India has actively supported and contributed to the strengthening of the global nuclear security architecture.
- There is a need for the international community to pay closer attention to the illicit proliferation of networks of nuclear weapons, their delivery systems, components and relevant technologies.
- India hopes that the international community will continue to work towards realising our collective aspiration for a nuclear weapon-free world.