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VII. PRELIMS/MISCELLANEOUS

I. POLITY & GOVERNANCE

TOPIC: GS II, GOVERNMENT POLICIES AND INTERVENTION

1. Proposed Ganga bill

Source: The Hindu

Why in news:

The government has banned the construction of jetties, ports or permanent hydraulic structures in the Ganga, unless permitted by the National Ganga Rejuvenation Authority under the proposed National River Ganga (Rejuvenation, Conservation and Management) Bill, 2018.

Details of the bill:

- It proposes to create a management structure that will supervise the health Ganga river and defines it as India's national river.
- It lays down a certain restrictions to ensure uninterrupted flow of the river Ganga.
- Under the proposed law, unauthorized activities that cause obstruction or discontinuity of water in Ganga due to engineered diversion of water has become an offence with 3 years imprisonment or fines upto Rs. 50 crore, or both.
- Background:
  1. According to several activists and experts, a host of dams in the upper stretches of Ganga obstruct its flow.
  2. Persistent campaigns led the government to finally recognise the need for proposed and existing hydropower projects to change their design plans to ensure minimum flows all through the year.

Other steps taken for the protection of Ganga river:

- Also known as Integrated Ganga Conservation Mission project, it has been started by the Ministry of Water Resources, River Development and Ganga Rejuvenation in 2015 with the aim to clean and protect the Ganga river in a comprehensive manner.
- It is 100% centrally funded.
- It will cover 8 states & 12 rivers.
- Local people's participation is envisaged in it
- Focused areas:
  - Expanding waste/sewage treatment, River Front Development, River surface cleaning, Bio-diversity Afforestation, Public awareness, Industrial affluent monitoring, Ganga Gram, Emphasises sustainable agriculture, Application of bio-remediation method /in-situ treatment to treat wastewater in drains, Setting up Ganga Eco-Task Force.

TOPIC: GS II, ASPECTS OF GOVERNANCE

2. Greater Nagaland idea worries Manipur

Source: The Hindu

Why in news:

Manipur has indicated that it will have to lose the Naga inhbited regions to the proposed Nagalim under the Naga Peace Accord, 2015. However, the Naga interlocutor from the central government has stated that the Accord will not compromise the territorial integrity of any State few months ago.

Background of the issue:

- The Nagaland Assembly has endorsed the Greater Nagalim' demand i.e. integration of all Naga-inhabited contiguous areas under one administrative umbrella.
- A Greater Nagalim comprises all contiguous Naga-inhabited areas along with Nagaland including several districts of Assam, Arunachal and Manipur along with a large tract of Myanmar. The map of Greater Nagalim has about 1,20,000 sq km, while the state of Nagaland consists of only 16,527 sq km.
- The claims have always kept Assam, Manipur and Arunachal Pradesh wary of a peace settlement that might affect their territories.
- In 2015, the Centre signed a framework agreement with the National Socialist Council of Nagaland-Isak-Muivah (NSCN-IM) to end the long-drawn Naga insurgency after it agreed to give up the demand for sovereignty.

*(**Note:** The Naga peace accord has been elaborated in the previous weekly magazines.)*

TOPIC: GS II, PRELIMS

3. West Bengal to observe Rosogolla Day on Nov. 14

Source: PIB

Why in news:

The West Bengal government has decided to observe 'Rosogolla Day' on November 14 to commemorate the first anniversary of Rosogolla getting Geographical Indication (GI) Tag.

GI tag in India?

- A GI is primarily an agricultural, natural or a manufactured product originating from a definite geographical territory.
- A total of 320 products have been conferred the GI status in India so far.

- Top three states in India with GI tag are Karnataka with 38 products GI products, Maharashtra with 32 products and Tamil Nadu with 25 GI products.
- Darjleeng tea was the first product in India to get the GI tag.

Significance of a GI tag:

- Typically, such a name conveys an assurance of quality and distinctiveness, which is essentially attributable to the place of its origin.
- Once the GI protection is granted, no other producer can misuse the name to market similar products. It also provides comfort to customers about the authenticity of that product.
- GI is covered as element of intellectual property rights (IPRs) under Paris Convention for Protection of Industrial Property.
- At international level, GI is governed by WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).
- In India, Geographical Indications of Goods (Registration and Protection Act), 1999 governs it.

TOPIC: GS II, REPRESENTATION OF PEOPLES ACT 1950/51

4. Criminalization of Politics

Source: The Hindu

Why in news:

- Recently the Election commission has stated that the candidates with criminal antecedents and their political parties can be charged with contempt of the Supreme Court if they fail to widely publicise the cases against them as prescribed and they can be penalized for false promises.
- The court has made it mandatory for the candidates and their parties to publish or broadcast details of the cases against them at least three times ahead of elections failing which, the Election Commission can act under various provisions, including Section 171 (G) of the Indian Penal Code that prescribes a fine.

About Section 171 (G) of the Indian Penal Code:

- It deals with the false statement in connection with an election. It says that - Whoever with intent to affect the result of an election makes or publishes any statement purporting to be a statement of fact which is false and which he either knows or believes to be false or does not believe to be true, in relation to the personal character or conduct of any candidate shall be punished with fine.

TOPIC: GS II, AGRICULTURE

5. Yuva Sahakar-Cooperative Enterprise Support and Innovation Scheme

Source: PIB

Why in news:

- National Cooperative Development Corporation (NCDC) under Ministry of agriculture has launched a youth-friendly scheme Yuva Sahakar-Cooperative Enterprise Support and Innovation Scheme to cater the needs and aspirations of the youth and for attracting them to cooperative business ventures.
- NCDC has also created a dedicated fund with liberal features enabling youth to avail the scheme.
- The scheme will be linked to Rs 1000 crore 'Cooperative Start-up and Innovation Fund (CSIF)' created by the NCDC.
- It would have more incentives for cooperatives of North Eastern region, Aspirational Districts and cooperatives with women or SC or ST or PwD members.
- It is also aimed at achieving the mission for doubling farmers' income by 2022.

About NCDC:

- It is the sole statutory organisation under the ministry of agriculture which functions as an apex financial and developmental institution exclusively devoted to cooperative sector.
- It supports cooperatives in diverse fields apart from agriculture and allied sectors.
- It focuses on Planning, promoting and financing programmes for production, marketing and storage of agricultural and allied products.

II. SOCIAL JUSTICE

TOPIC: GS II, HEALTH

6. Impact of Poor Quality Diet

Source: the Hindu

Why in news:

A recent report released by United Nations Food and Agriculture Organization (UN FAO) found that poor quality diet is a greater threat to public health across the world than malaria, tuberculosis or measles etc.

Details of the report:

- The report titled "Preventing nutrient loss and waste across the food system: Policy action for high quality diets" was released by the United Nations Food and Agriculture Organization along with the Global Panel on Agriculture and Food Systems for Nutrition.

- It stated that eating more of the nutrient rich food already being produced would result in savings to land, water and energy consumption tied to food production, and resources used in industrial food fortification.
- According to the report, the diet-related factors now account for six of the top nine contributors to the global burden of disease.
- In 2016, one in five deaths was associated with poor diets including increasing non-communicable diseases associated with the rise of obesity, also linked to poor-quality diets globally.
- Although the world is producing more food than it needs, an estimated three billion people have inadequate diets.
- Now, the world's total supply of calories been the highest due to the remarkable gains in agricultural productivity.
- It recommended higher consumption of fresh fruits and vegetables and greater dietary diversity to tackle micronutrient deficiencies.
- Wastage of food:
  1. Wastage of around half of all food contains nutrient-rich foods such as fruits, vegetables etc.
  2. One third of staple crops and 25% of all meat produced are wasted.
- In low-income countries, food is mostly lost during harvesting, storage, processing and transportation, while in high-income nations the waste is at retail and consumer level and together, they directly impact the number of calories and nutrients actually available for consumption.
- The policymakers around the world are increasingly acknowledging the challenge of meeting the rising demand for a healthy diet rather than just calorie sufficiency.

About Global panel of Agriculture and food systems for nutrition:

- It was formed after the Nutrition for growth event in London in 2013.
- The panel is independent international group of leaders who hold or have held high office and show strong personal commitment on improving nutrition.
- It aims to take a multi sectoral approach engaging a broad community of stakeholders in public and private sector.
- It works with the international multi sector stakeholders to help the government in the low and middle income countries develop evidence based policies that makes high quality diets safe, affordable and accessible.

TOPIC: GS II, HEALTH

7. Pneumonia Menace in India

Source: The Hindu

Why in news:

International Vaccine Access Center (IVAC) has released the Pneumonia and Diarrhea Progress Report 2018 on 10th World Pneumonia Day on November 12th.

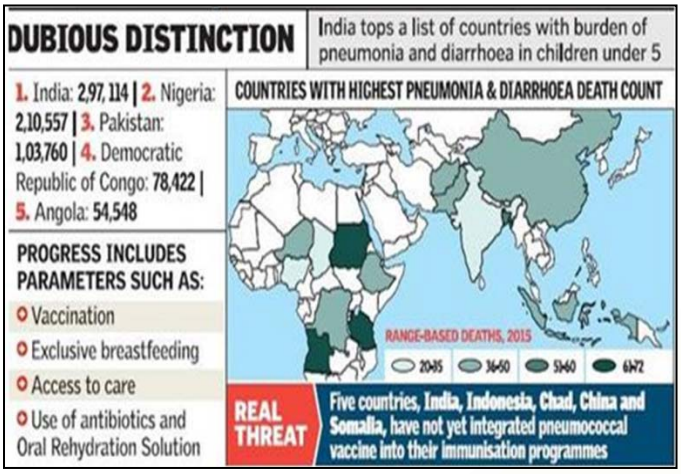
Details of the report:

1. It has analysed how effectively countries are delivering 10 key interventions to help protect against, prevent, and treat, pneumonia and diarrhoea.
2. These key interventions are - breastfeeding, vaccination, access to care, use of antibiotics, oral rehydration solution (ORS) and zinc supplementation.
3. Findings of the report:
   - The report has focused on 15 countries which account for 70% of global pneumonia and diarrhoea deaths in children under five. The health systems in these countries are failing to ensure that the most vulnerable children have access to prevention and treatment services. These 15 countries are- India, Nigeria, Pakistan, the Democratic Republic of Congo, Ethiopia, Chad, Angola, Somalia, Indonesia, Tanzania, China, Niger, Bangladesh, Uganda, and Cote d'Ivoire.
   - Globally, one of every four deaths in children under five years of age has been caused due to pneumonia and diarrhoea led to in 2016 and two-thirds of the global burden of pneumonia and diarrhoea mortality has occurred in just 15 countries.
   - India and Nigeria themselves constitute nearly half a million pneumonia and diarrhoea deaths despite improvements in access and use of health interventions.
   - The rotavirus vaccine has not been introduced in eight of these 15 focused countries and its coverage is insufficient in the remaining countries where it has been introduced.
   - India and Pakistan are the countries with lowest rotavirus vaccine coverage.

India's case:

- India has topped the list of 15 countries with the highest number of pneumonia and diarrhoea deaths in children under five in 2016.
- India's Rotavirus vaccination coverage is the lowest among the 15 countries.

- Proportion of children receiving important treatments remains dismally low, with not more than 20 percent receiving ORS for diarrhoeal disease.
- Various treatment indicators have shown a declining trend i.e., ORS coverage (-13%), exclusive breastfeeding (-10%), and access to pneumonia care (-4%).
- The pneumococcal conjugate vaccine (PCV) which was introduced in 2017 has been included in only six states till date.



Advantages of the report:

- It helps in finding out the short-comings in the policy intervention for improving the health sector in the countries and could help in achieving the UN Sustainable Development Goal 3 i.e. reducing under-five mortality to at least as low as 25 per 1,000 live births by 2030.

Issues:

- Although the countries are making progress in immunisation coverage, they seriously lag in efforts to treat childhood illnesses especially among populations that are remote, impoverished or otherwise left behind.

Way forward:

- Addressing inequities will demand greater levels of funding, strong political commitment, accountability supported by better data, and a coordinated global effort that prioritizes the most vulnerable.
- Global community should collect better data and target communities of greatest need.
- Scale-up of the vaccine to all states should be considered in India.

TOPIC: GS II, HEALTH

8. Contamination of Polio Vaccine

Source: The Hindu

Why in news:

- Type 2 vaccine virus has been detected in stool samples from children in Uttar Pradesh few months back implying that Type 2 vaccine is still being developed. It was also revealed that the OPV, made by the firm Bio-Med, contained traces of the Type 2 vaccine virus.
- Since April 2016, all oral polio vaccines (OPV) across the world contain only two of the three polio serotypes — Type 1 and Type 3. Type 2 is banned as this virus was eradicated globally by 1999, and OPV itself can cause polio in rare cases.

Potential of Vaccine to cause Polio:

- It is believed that a vaccine can cause polio disease.
- There are two ways in which all three oral vaccine viruses can cause polio. These are as follows:
  1. Vaccine Associated Paralytic Polio (VAPP): In extremely rare cases, the vaccine virus mutates into a virulent version of itself, causing disease in the child who received the vaccine or in a person who came in contact with the child. It causes isolated cases and not outbreaks, because it is not contagious.
  2. Circulating Vaccine Derived Polio Virus (cVDPV): In this case, the vaccine virus mutates into a virulent version and also becomes contagious which causes outbreaks. This usually happens in communities where vaccination rates are low. cVDPV is also rare.

Impact of contamination of vaccines:

- In rare cases the contamination of vaccines can cause VAPP and cVDPV.
- A 2002 Bulletin of the World Health Organisation, India saw one case of VAPP for every 4.1-4.6 million OPV doses administered in 1999.
- cVDPV can also be caused in rare cases under two condition:
  1. A large number of children to remain unimmunised against Type-2.
  2. The virus needs to remain contagious.

Chances in India:

- Even though India stopped giving children OPV Type 2 in 2016, it is giving them the Inactivated Polio Vaccine, which also protects against the Type-2 polio.
- After news of the contamination, IPV is given to children who had missed it earlier.
- All this drastically reduces the chance of the vaccine virus which has been detected to turn into cVDPV.

Way forward:

- Central Drugs Standard Control Organisation should trace the source of the contamination like

bio pharma. Unless this happens, ways to prevent incidents of larger contamination in future will be challenging.

- State health authorities should make it clear to make the common public aware about the contamination. Early media reports said 1.5 lakh vials were contaminated.

TOPIC: GS II, EDUCATION

9. LEAP and ARPIT for Higher Education Faculty

Source: PIB

Why in news:

- Ministry of Human Resource Development has recently launched Leadership for Academicians Programme (LEAP) and Annual Refresher Programme In Teaching (ARPIT).
- ARPIT will focus on empowering the teaching faculty while LEAP will focus on empowerig higher education institutions for developing better student.

About Leadership for Academicians Programme (LEAP):

- It is a three week leadership development training programme for second level academic functionaries in public funded higher education institutions.
- It aims to prepare second tier academic heads who are potentially likely to assume leadership roles in the future.
- It will provide senior faculty, with high academic credentials, the required leadership and managerial skills including skills of problem-solving, handling stress, team building work, conflict management, developing communication skills, understanding and coping with the complexity and challenges of governance in HEIs, financial & general administration.
- It will be implemented through 15 NIRF top ranked Indian Institutions.

About Annual Refresher Programme in Teaching (ARPIT):

- It is a major and unique initiative of online professional development of 15 lakh higher education faculty using the Massive Open Online Courses MOOCs platform SWAYAM.
- It will be implemented by 75 discipline-specific institutions have been identified and notified as National Resource Centres (NRCs) in the first phase, which are tasked to prepare online training material with focus on latest developments in the discipline, new & emerging trends etc.
- This course is a 40 hour module with 20 hours of video content and 20 hours of non-video content. All in-service teachers, irrespective of their subject and seniority can join this programme.
- It will be an ongoing exercise and it is expected to revolutionize professional development of faculty by leveraging ICT and online technology platform of SWAYAM.

III. ECONOMY

TOPIC: GS III, INDIAN ECONOMY AND ISSUES RELATING TO PLANNING, MOBILIZATION OF RESOURCES

10. Central Board of the RBI

Source: The Hindu

Why in news:

- The RBI Board recently entered the news during the public spat between the central bank and the Finance Ministry. One of the reasons for the disagreement was the government's alleged threat of invoking Section 7 of the RBI Act.
- Section 7 basically empowers the government to supersede the RBI Board and issue directions to the central bank if they are considered to be "necessary in public interest".

What is the RBI Board?

- The RBI Board is a body comprising officials from the central bank and the Government of India, including officials nominated by the government. According to the RBI, the "general superintendence and direction of the affairs and business of the RBI is entrusted to the Central Board" and the Board exercises all powers and does all acts and things that are exercised by the RBI. The Board is also to recommend to the government the design, form and material of bank notes and also when and where they can serve as legal tender.

Who sits on the Board?

The Board consists of official directors, who include the Governor and up to four Deputy Governors, non-official directors, who include up to ten directors from various fields and two government officials, and one director from each of four local boards of the RBI.

- The Governor and Deputy Governors hold office for not more than five years, the ten directors nominated by the government hold office for four years, and the government officials are to hold a term on the RBI Board as long as the government sees fit.
- According to the RBI Act, the director of the RBI Board cannot be a salaried government official

(except for the ones specifically nominated by the government), be adjudicated as insolvent or have suspended payments to creditors, an officer or employee of any bank (again, this does not include the government nominee), or, interestingly, "is found lunatic or becomes of unsound mind".

When does the Board meet?

- The Governor has to call a Board meeting at least six times in a year, and at least once each quarter. A meeting can be called if a minimum of four Directors ask the Governor to call a meeting. The Governor or, if for any reason unable to attend, the Deputy Governor authorised by him to vote for him, presides the Board meetings. In the event of split votes, the Governor has a second, or deciding vote.

TOPIC: GS III, GOVERNMENT POLICIES AND INTERVENTIONS FOR DEVELOPMENT IN VARIOUS SECTORS

11. Government approves mechanism for sale of Enemy Shares

Source: PIB

Why the news:

The Union Cabinet has approved a mechanism for sale of enemy shares which at the current price is estimated at around Rs 3,000 crore.

- Sale proceeds are to be deposited as disinvestment proceeds in the government account maintained by the Ministry of Finance.
- The Department of Investment and Public Asset Management has been authorised to sell the shares.
- A total number of 6,50,75,877 shares in 996 companies of 20,323 shareholders are under the custody of Custodian of Enemy Property of India (CEPI).

Benefit:

- The decision will lead to monetisation of movable enemy property lying dormant for decades and the proceeds will be used for development and social welfare programmes.

Background:

- Total shares, known as "enemy shares numbering 6,50,75,877 worth Rs 3,000 crore, are lying unutilised because enemy property act includes movable and immovable property. Of these 996 companies, 588 are functional/ active companies, 139 of these are listed with remaining being unlisted.

What are enemy properties?

- When wars broke out between India and China in 1962, and India and Pakistan in 1965 and 1971, the central government took over properties of citizens of China and Pakistan in India under the Defence of India Acts. These Acts defined an 'enemy' as a country that committed an act of aggression against India, and its citizens.
- The properties of enemies in India were classified as enemy property. The properties included land, buildings, shares held in companies, gold and jewellery of the citizens of enemy countries. The responsibility of the administration of enemy properties was handed over to the Custodian of Enemy Property, an office under the central government.

Enemy Property Act:

- The Defence of India Acts were temporary laws that ceased to operate after the wars ended. To administer the enemy property seized during the wars, the government enacted the Enemy Property Act in 1968. This law laid down the powers of the Custodian of Enemy Property for management and preservation of the enemy properties.
- The government amended the Act in the wake of a claim laid by the heirs of Raja Mohammad Amir Mohammad Khan, known as Raja of Mahmudabad, on his properties spread across Uttar Pradesh and Uttarakhand.
- The government has vested these properties in the Custodian of Enemy Property for India, an office instituted under the Central government.

TOPIC: GS II, STATUTORY, REGULATORY AND VARIOUS QUASI-JUDICIAL BODIES

12. Dredging Corporation of India

Source: PIB

Why in news:

Cabinet Committee on Economic Affairs (CCEA) has approved strategic disinvestment of 100% Government of India's shares in Dredging Corporation of India Limited (DCIL) to consortium of four ports namely, Vishakhapatnam Port Trust (Andhra Pradesh), Paradeep Port Trust (Odisha), Jawahar Lal Nehru Port Trust (Maharashtra) and Kandla Port Trust (Gujarat).

Presently, Central Government holds 73.44% shares in DCIL.

Significance:

- Strategic sale of DCIL will further facilitate linkage of dredging activities with ports, keeping in view the role of DCIL in expansion of dredging activity in the country as well as potential scope for diversification of ports into third party dredging.
- The co-sharing of facilities between company as well as ports shall lead to savings for ports.

- This will also further provide opportunities for larger investment in DCIL as integration with ports shall help ineffective vertical linkage in value chain.

About Dredging Corporation of India Limited (DCIL):

- It is miniratna public sector unit (PSU) engaged in the business of dredging.
- It was established in March 1976 and is headquartered in Visakhapatnam, Andhra Pradesh.
- It reports to the Ministry of Shipping.
- It does dredging for Indian seaports exclusively. It is involved in capital dredging, beach nourishment, and land reclamation.

TOPIC: GS III, INFRASTRUCTURE-ENERGY

13. INSPIRE 2018

Source: PIB

Why in news:

The second edition of International Symposium to Promote Innovation & Research in Energy Efficiency (INSPIRE) was held in New Delhi. The symposium focussed on enhancing grid management, e-Mobility, financial instruments and technologies for energy efficiency in India.

- The #InnovateToINSPIRE challenge was organized by EESL and World resources Institute (WRI) between 21 August, 2018 and 12 October, 2018 in the run-up to INSPIRE 2018. The challenge invited participants to submit sustainable and scalable solutions to seven specific challenges spanning grid management, e-Mobility, energy efficient technologies and financial instruments.

About INSPIRE 2018:

- INSPIRE 2018 has been organised in collaboration with the Bureau of Energy Efficiency (BEE), The Energy & Resources Institute (TERI), Asian Development Bank (ADB), the United Nations Environment Program (UNEP), and the Administrative Staff College of India (ASCI).
- The event is bringing together policy-makers, influencers, innovators, thought leaders, researchers, leading energy-efficient companies, government agencies, business leaders and other stakeholders to deliberate on key energy policies, market transformation strategies, and sustainable business models that will help leverage the full potential of energy efficiency and bring its multiple co-benefits to the fore.

About Energy Efficiency Revolving Fund (EERF):

- Alongside, to support investments in new, innovative and scalable business models, EESL and Asian Development Bank (ADB) have signed an agreement for a Global Environment Facility (GEF) grant of USD 13 million to establish an Energy Efficiency Revolving Fund (EERF).
- EERF aims to expand and sustain investments in the energy efficiency market in India, build market diversification, and scale up existing technologies.

About EESL:

Energy Efficiency Services Limited (EESL), under the administration of Ministry of Power, Government of India, is working towards mainstreaming energy efficiency and is implementing the world's largest energy efficiency portfolio in the country.

- Driven by the mission of Enabling More – more transparency, more transformation, and more innovation, EESL aims to create market access for efficient and future-ready transformative solutions that create a win-win situation for every stakeholder. By 2020, EESL seeks to be a US$ 1.5 billion (INR 10,000 crore) company.
- EESL has pioneered innovative business approaches to successfully roll-out large-scale programs that allow for incentive alignment across the value chain and rapidly drive transformative impact. EESL aims to leverage this implementation experience and explore new overseas market opportunities for diversification of its portfolio. As on date, EESL has begun its operations in UK, South Asia and South-East Asia.

TOPIC: GS III, INFRASTRUCTURE-ENERGY

14. Indian Wind Turbine Certification Scheme (IWTCS)

Source: PIB

Why in news:

Ministry of New and Renewable Energy, in consultation with National Institute of Wind Energy Chennai, has prepared a draft of new Scheme called Indian Wind Turbine Certification Scheme (IWTCS) incorporating various guidelines.

About IWTCS:

- The IWTCS is a consolidation of relevant National and International Standards (IS/IEC/IEEE), Technical Regulations and requirements issued by Central Electricity Authority (CEA), guidelines issued by MNRE and other international guidelines. It also strived to incorporate various best practices from other countries to ensure the quality of the wind energy projects.
- The draft Scheme enlists the guidelines for the benefit of all the stakeholders from concept to

lifetime of wind turbine, including Indian Type Approved Model (ITAM), Indian Type Certification Scheme (ITCS), Wind Farm Project Certification Scheme (WFPCS) and Wind Turbine Safety & Performance Certification Scheme (WTSPCS).

- The IWTCS is envisaged to assist and facilitate the following stakeholders; (i.) Original Equipment Manufacturers (OEMs) (ii.) End Users -Utilities, SNAs, Developers, IPPs, Owners, Authorities, Investors and Insurers (iii.) Certification Bodies (iv.) Testing Laboratories.

Background:

- Wind sector in India is growing at a rapid pace with increased utilization of wind energy for the power development. The modern wind turbines have higher hub heights, larger rotor diameter, higher capacity and improved Capacity Utilization Factor (CUF) along with technological improvements.
- Under these developments, there is a need for comprehensive document which provides the complete technical requirements which shall have to be complied by the wind turbines for the safe and reliable operation by all the stakeholders viz, OEMs, Independent Power Producers (IPPs), wind farm developers, Financial Institutions, Utilities and others. Also, there is a need for technical regulations which shall facilitate common ground for OEMs, Developers, Investors and Financial Institution for systematic development.

TOPIC: GS III, INFRASTRUCTURE-WATERWAYS

15. India's first multi-modal terminal on Inland Waterways

Source: The Hindu

Why in news:

Prime Minister Narendra Modi recently inaugurated India's first multi-modal terminal on the Ganga river in Varanasi and received the country's first container cargo transported on inland waterways from Kolkata.

Key points:

- The first consignment containing food and beverage had set sail from Kolkata in the last week of October.
- This is the first of the four multi-modal terminals being constructed on the National Waterway-1 (river Ganga) as part of the World Bank-aided Jal Marg Vikas project of the Inland Waterways Authority of India.

Significance:

- Container cargo transport comes with several inherent advantages. Even as it reduces the handling cost, allows easier modal shift, reduces pilferages and damage, it also enables cargo owners to reduce their carbon footprints.

About Jal Marg Vikas Project:

- Jal Marg Vikas Project aims at developing the stretch of the river between Varanasi and Haldia for navigation of large vessels weighing up to 1,500 tonnes to 2,000 tonnes.
- Its objective is to promote inland waterways as a cheap and an environment-friendly means of transportation, especially for cargo movement.
- The Inland Waterways Authority of India (IWAI) is the project implementing agency.
- The project entails construction of three multi-modal terminals (Varanasi, Sahibganj and Haldia), two inter-modal terminals, five roll-on-roll-off (Ro-Ro) terminal pairs, new navigation lock at Farakka, West Bengal, assured depth dredging, integrated vessel repair and maintenance facility, differential global positioning system (DGPS), river information system (RIS) and river training.

NW 1:

- Ganga-Bhagirathi-Hooghly river system from Allahabad to Haldia was declared as National Waterway No.1. The NW-1 passes through Uttar Pradesh, Bihar, Jharkhand and West Bengal and serves major cities and their industrial hinterlands.

TOPIC: GS III, TRANSPORT AND MARKETING OF AGRICULTURAL PRODUCE AND ISSUES AND RELATED CONSTRAINTS; E-TECHNOLOGY IN THE AID OF FARMERS

16. Mega Food Park

Source: PIB

Why in news:

Maharashtra's second Mega Food Park has been opened in Aurangabad District.

- Promoted by M/s Paithan Mega Food Park Pvt Ltd, the Park is located in inWahegaon and Dhangaon village in Paithan Taluka of Aurangabad district.
- A 3rd Mega Food Park has been sanctioned by the Ministry in Maharashtra and is under implementation in Wardha District while the first Park was inaugurated on 1st of March 2018 in Satara district.

About Mega Food Parks Scheme:

- Ministry of Food Processing Industries is implementing Mega Food Park Scheme in the country.
- It is aimed at giving a major boost to the food processing sector by adding value and reducing

food wastage at each stage of the supply chain with particular focus on perishables.

- The Scheme of Mega Food Park aims at providing a mechanism to link agricultural production to the market by bringing together farmers, processors and retailers so as to ensure maximizing value addition, minimizing wastages, increasing farmers' income and creating employment opportunities particularly in rural sector.
- Mega Food Parks create modern infrastructure facilities for food processing along the value chain from farm to market with strong forward and backward linkages through a cluster based approach.
- A maximum grant of R50 crore is given for setting up a MFP, in minimum 50 acres of contiguous land with only 50% contribution to the total project cost.

Mode of operation:

- The Scheme has a cluster based approach based on a hub and spokes model. It includes creation of infrastructure for primary processing and storage near the farm in the form of Primary Processing Centres (PPCs) and Collection Centres (CCs) and common facilities and enabling infrastructure at Central Processing Centre (CPC).
- The PPCs are meant for functioning as a link between the producers and processors for supply of raw material to the Central Processing Centres.
- CPC has need based core processing facilities and basic enabling infrastructure to be used by the food processing units setup at the CPC. The minimum area required for a CPC is 50 acres.
- The scheme is demand-driven and would facilitate food processing units to meet environmental, safety and social standards.

IV. ENVIRONMENT

TOPIC: GS III, CONSERVATION, ENVIRONMENTAL POLLUTION AND DEGRADATION

17. Global Cooling Innovation Summit

Source: PIB

Why in news:

Two-day Global Cooling Innovation Summit was held in New Delhi.

About the Global Cooling Innovation Summit:

- The Summit is a first-of-its-kind solutions-focused event that will bring together leaders from around the world to explore concrete means and pathways to address the climate threat that comes from the growing demand from room air conditioners.
- The event is jointly organized by the Department of Science and Technology, Government of India, along with Rocky Mountain Institute, Alliance for An Energy Efficient Economy (AEEE), Conservation X Labs and CEPT University.

Background:

- There are currently 1.2 billion room air conditioning units in service around the world. It is estimated that the number of units will increase to at least 4.5 billion by 2050. India alone will see over 1 billion air conditioning deployed in the market by 2050. The energy consumption associated with comfort cooling represents one of the largest end-use risks to the climate, putting the most vulnerable populations at risk.

Global Cooling Prize:

- The Global Cooling Prize, an international competition to incentivize the development of a residential cooling technology that will have at least five times (5x) less climate impact than the standard Room Air Conditioning (RAC) was announced at the inaugural session of the two day Global Cooling Innovation Summit.
- Global Cooling Prize is a competition with global reach and participation to achieve dramatic breakthroughs in cooling technologies. The objective of this competition would be to develop a cooling technology that requires radically less energy to operate, utilizes refrigerants with no ozone depletion potential and with low global warming potential, and has the potential to be cost-effective at scale.

Significance of the prize:

- This awards programme will call world-wide attention to the most promising ideas across the globe. This award will celebrate successes and facilitate endeavours of innovators through providing recognition, encouragement and support.
- The award will also be able to build a collaborative platform that can utilize the potential of researchers so that public research contributes towards fostering innovation and create impact which is of social and economic good.
- This recognition will not only recognise the eminent contributions to clean energy research development and demonstration, but would also motivate younger researchers to focus on innovations needed in clean energy domain to make world a better place to live.

TOPIC: GS I IMPORTANT GEOPHYSICAL PHENOMENA SUCH AS EARTHQUAKES, TSUNAMI, VOLCANIC ACTIVITY, CYCLONE ETC.

18. Earth has three 'moons'

Source: India Today

Why the news:

After more than half a century of speculation, it has now been confirmed that Earth has two dust 'moons' orbiting it which are nine times wider than our planet.

- The new moons exist at a distance of approximately 250,000 miles — more or less the same distance as our moon.

Facts about the newly discovered dust moons:

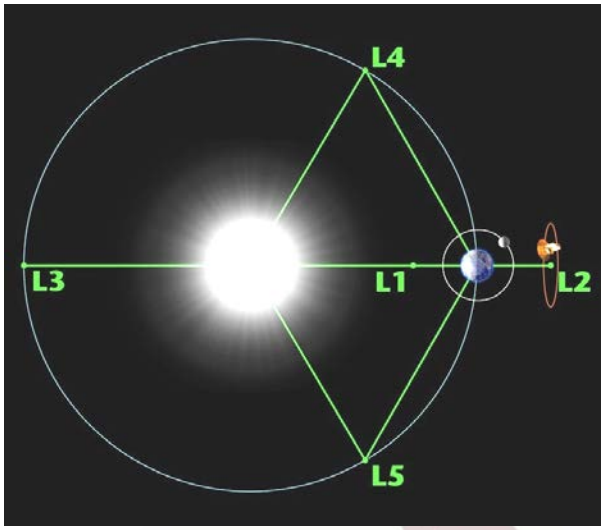
- The presence of the dust 'moons' or Kordylewski clouds had been inferred by researchers since long before. But the first glimpse of the clouds was seen only in 1961 by Polish astronomer Kazimierz Kordylewski, after whom the dust clouds were named.
- The new findings note that each Kordylewsky cloud is about 15 by 10 degrees wide, or equal to 30 by 20 lunar disks in the night sky.
- They are spread over a space area that is almost nine times the width of Earth — about 65,000 by 45,000 miles in actual size.
- The dust 'moons' are huge but they are made of tiny dust particles that barely measure one micrometre across.
- When sunlight hits the dust particles, they glow very faintly, much like the zodiacal light we receive from the dust scattered in between planetary orbits.
- Since these satellite dust clouds emit an extremely faint light, they are very difficult to find amidst the star light, sky glow, galactic light and zodiacal light in the sky though they are as close to us as the moon.

About Kordylewski clouds:

- The Kordylewski clouds are always changing. They might be stable in orbit and may have existed for millions of years, but the ingredients that make the clouds — the dust particles — are always getting swapped for others. Some escape to gravitational pulls from Earth or the moon, while others come from interplanetary spaces and meteor showers.

How Lagrange points in space helped find the extra 'moons'?

- Speculations about Earth having multiple moons have taken turns in astronomer circles for years. It was realised that if extra moons did exist, they could only do so in stable points in Earth's orbit.



Lagrange points are sweet spots in a planetary orbit where the pull of gravity working from two opposing celestial bodies is balanced due to the centripetal force of their orbits. Thus, an object at a Lagrange point will remain fixed at a constant distance from both the moon and Earth.

- In the 1950s, Kordylewski searched two Lagrange points — L4 and L5 — where he found the first glimpse of the two dust clouds orbiting Earth.

Can these dust 'moons' be dangerous or will they help us?

- These huge clouds of dust could add much to space exploration efforts when it comes to fuel consumption and safety issues. Sometimes, satellites need to be parked at the Lagrange points so that the spacecraft consumes minimal fuel and can still stay in orbit.
- The James Webb Space Telescope will be set up at the L2 Lagrange point in 2020 for this purpose. Moreover, space agencies are also planning to use Lagrange points as transfer stations for Mars missions.

TOPIC: GS I, GEOGRAPHICAL FEATURES (INCLUDING WATER-BODIES AND ICE-CAPS) AND IN FLORA AND FAUNA AND THE EFFECTS OF SUCH CHANGES

19. Where did Earth's water originate from?

Source: India Today

Why in news:

According to a recent research, Earth's global ocean water may have originated from both asteroidal material and gas left over from the formation of the Sun. The study gives insights about the development of other planets and their potential to support life.

- Researchers noted that since comets contain a lot of ices, it could have supplied some water.

Asteroids, which are not as water-rich yet still plentiful, could be a source as well.

- The study challenges widely-accepted ideas about hydrogen in Earth's water by suggesting the element partially came from clouds of dust and gas remaining after the Sun's formation, called the solar nebula.

Background:

- The early ocean known as Arabia was formed 4 billion years ago on Mars, while the Deuteronilus ocean was formed 3.6 billion years ago. Both coexisted with the massive volcanic province Tharsis, located on the unseen side of the planet, which may have helped support the existence of liquid water; the water is now gone, perhaps frozen underground and partially lost to space, while the ancient seabed is known as the northern plains.

Significance:

- The new finding fits neatly into current theories of how the Sun and the planets formed. It also has implications for habitable planets beyond the solar system. Astronomers have discovered more than 3,800 planets orbiting other stars, and many appear to be rocky bodies not greatly different from our own.

Fact: bout 71 per cent of Earth's surface is covered by water, and the oceans hold about 96.5 per cent of all the water of the planet.

V. INTERNATIONAL RELATIONS

TOPIC: GS II, INDIA AND ITS NEIGHBOURING COUNTRIES

20. Shift in India's Afghanistan Policy

Source: The Hindu

Why in news:

Russia has invited a group of senior Afghan politicians to talks known as the Moscow format, with the Taliban in Moscow, in which India has agreed to participate at a non-official level for the first time.

Details of the Moscow Format:

- Russia had earlier proposed holding multilateral peace talks in Moscow and invited delegations from India, Pakistan, the U.S., China, Iran and five Central Asian Republics and the Taliban to attend a summit.
- India will be sending two diplomats to attend these talks on the Afghanistan peace process in Russia.
- It will be the first time an Indian delegation has been present at the table in talks with the Taliban representatives.

Reason for the dialogue:

- Afghan government is struggling to recover control of districts lost to Taliban insurgents while casualties among security forces have reached record high levels.
- Many political leaders of Afghanistan have become a vocal critic of US policy and they have inclined to Moscow for ensuring peace in the country. They opine that US is using Afghanistan as a client state to keep an eye on its foes and rivals like Iran, Russia and China and Pakistan.
- Taliban leaders have agreed for the talks initiated by Russia because many of them have been left out of the diplomatic engagement between the Taliban and the US which concluded recently in Qatar.

Shift in India's policy towards talks with Taliban:

- India's decision was the outcome of close discussions with the Afghanistan government and it was felt necessary for India to have a presence there.
- India would have preferred a direct process between the Afghanistan government and the Taliban, but since that is not possible, a regional process like the one in Russia is the next best option.
- India supports all efforts at peace and reconciliation in Afghanistan that will preserve unity and plurality, and bring Afghan led stability and prosperity to the country. It can be smoothly achieved by engaging with the Taliban.

What does India's participation indicates?

- India's decision to participate in "Moscow Format" is a significant marker in the Afghan dialogue process, given that India has in the past declined to participate with the Taliban unless the Afghan government participated.
- India supports all efforts at peace and reconciliation in Afghanistan that will preserve unity and plurality, and bring security, stability and prosperity to the country.
- India's consistent policy has been that such efforts should be Afghan-led, Afghan-owned, and Afghan-controlled with the participation of the Government of Afghanistan.

Significance of this dialogue:

- The Moscow talks underline the increasingly active role Russia is playing in Afghanistan, decades after Soviet forces withdrew from the country, with business investment plans, diplomatic and cultural outreach, and small military support for the central government.
- Afghanistan government opines that peace negotiations need to involve regional powers, most notably Russia and China as well as

neighbors including Iran to make the negotiation process more holistic and consensus-based. This dialogue is aimed at fulfilling this desire of Afghan government.

TOPIC: GS II, BILATERAL AND MULTILATERAL GROUPINGS

21. India and RCEP

Source: The Hindu

Why in news:

- ASEAN countries have offered India concession on the extent to which it needs to open up its markets, in a bid to encourage India to join the proposed Regional Comprehensive Economic Partnership (RCEP) quickly.
- It has offered India to open up only 83% of its market against the proposed 92 % under the RCEP.
- The ASEAN countries are keen to have India as part of the partnership.
- Opening up its market to China has been India's main concern about joining RCEP.
- India has also achieved some success by getting the other RCEP countries to liberalise their services markets and allow for a more free movement of service sector professionals.

RCEP (Regional Comprehensive Economic Partnership):

- RCEP is a proposed regional free trade agreement (FTA) comprising of ASEAN countries and their 6 FTA partners (India, China, Japan, South Korea, Australia and New Zealand).
- It aims to strengthen economic linkages and to enhance trade and investment related activities.
- Coverage Area: Trade in goods and services, investment, economic and technical cooperation, intellectual property, competition, dispute settlement, e-commerce, small and medium enterprises (SMEs) and other issues.
- It 's negotiation formally started in 2012.
- Advantages:
  1. It would bring large income gains to not only Asia but the world economy.
  2. It will reduce the overlapping among Asian FTAs.
  3. It will reduce the trade barriers in Asia and the new rules will be consistent with WTO agreements.
  4. It will promote easier FDI flows and technology transfers by multinational corporations
  5. With rise of protectionism, RCEP is important for promoting free trade in the region.
  6. Significance for India:
     - Joining the RCEP is important for India since it is not a part of the other proposed large trade agreements like the trans-pacific partnership (TPP) and transatlantic trade and investment partnership (TTIP).
     - It would enable India to strengthen its trade ties with Australia, China, Japan and South Korea and thus reduce the potential negative impacts of TPP and TTIP on the Indian economy.
     - The rise in protectionism and non- tariff barriers and regulatory measures and the deadlock in WTO negotiations are also important reasons for India to join the RCEP agreement as it can increase market access.
     - It can influence India's strategic and economic status in the Asia-Pacific region and help in fulfilment of India's Act East Policy.
     - It will facilitate Indian companies to access new markets and it will give a boost to Foreign Direct Investment (FDI) in India.
     - It will facilitate India in removing technical barriers to trade like sanitary and phyto-sanitary measures of these products.

Concerns for India:

- India faces trade deficit with ten of the RCEP countries, particularly with China with whom India has a huge trade imbalance.
- Indian industries have been apprehensive about tariff reductions in RCEP, which would further open its markets to Asian goods, especially from China. Major sectors that may be impacted include steel, plastics, copper, aluminum, machine tools, chemicals, textiles and pharma, which would suffer from cheaper imports.
- Huge concessions given by developed countries like Australia in agri products can be an extremely sensitive issue for India's farmers. Indian farmers need support from the government in view of their low productivity and low income levels.
- In services, RCEP has not gained much traction and India seems to be not getting any meaningful market access.

ASEAN:

- Association of Southeast Asian Nations formed in 1967 by five countries namely Indonesia, Malaysia, Philippines, Singapore and Thailand under ASEAN or Bangkok declaration which later on extended to 10 members with the inclusion of Cambodia, Brunei, Laos, Myanmar and Vietnam.
- Objective:

1. To accelerate the economic growth, social progress and cultural development in the region through joint endeavours in the spirit of equality and partnership.
2. To promote regional peace and stability through abiding respect for justice and the rule of law in the relationship among countries in the region and adherence to the principles of the United Nations Charter.

VI. SCIENCE & TECHNOLOGY

TOPIC: GS III, AWARENESS IN SPACE

22. GSLV MkIII-D2 successfully launches GSAT-29

Source: PIB

Why in news:

India's GSAT-29 communication satellite was successfully launched by the second developmental flight of Geosynchronous Satellite Launch Vehicle MarkIII (GSLV MkIII-D2) from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota.

- The first successful mission of GSLV Mark III was an experimental suborbital flight in 2014. Subsequently, GSLV Mark III-D1 launched GSAT-19, a high throughput communication satellite, with a lift-off mass of 3150 kg, into GTO on June 5, 2017.

About GSLV Mk III:

- GSLV Mk III is a three-stage heavy lift launch vehicle developed by the Indian Space Research Organisation (ISRO). Two massive boosters with solid propellant constitute the first stage, the core with liquid propellant form the second stage and the cryogenic engine completes the final stage.

About GSAT-29:

- GSAT-29 is a multiband, multi-beam communication satellite, intended to serve as test bed for several new and critical technologies. Its Ku-band and Ka-band payloads are configured to cater to the communication requirements of users including those from remote areas especially from Jammu & Kashmir and North-Eastern regions of India.
- In addition, the Q/V-Band communication payload onboard is intended to demonstrate the future high throughput satellite system technologies. Geo High Resolution Camera will carry out high resolution imaging. Optical Communication Payload will demonstrate data transmission at a very high rate through optical communication link.

Significance of the launch:

- The success of GSLV MkIII-D2 marks an important milestone in Indian space programme towards achieving self-reliance in launching heavier satellites. The success of this flight also signifies the completion of the experimental phase of GSLV Mark III.

TOPIC: GS III, AWARENESS IN THE FIELDS OF IT, COMPUTERS, ROBOTICS, NANO-TECHNOLOGY, BIO-TECHNOLOGY

23. Novel 'bionic mushrooms' can produce electricity

Source: The Hindu

Why the news:

Scientists, including those of Indian origin, have created a bionic device that generates green power by 3D-printing clusters of cyanobacteria on an ordinary white button mushroom.

- The research by the Stevens Institute of Technology in the U.S. is part of a broader effort to better improve our understanding of cells biological machinery and how to use them to fabricate new technologies and useful systems for defence, healthcare and the environment.
- The researchers took an ordinary white button mushroom from a grocery store and made it bionic, supercharging it with clusters of cyanobacteria that create electricity and swirls of graphene nanoribbons that can collect the current.

Background:

- Cyanobacteria's ability to produce electricity is well known. However, researchers have been limited in using these microbes in bioengineered systems because cyanobacteria do not survive long on artificial bio-compatible surfaces.

How was it developed?

- Researchers used a robotic arm-based 3D printer to first print an "electronic ink" containing the graphene nanoribbons. This printed branched network serves as an electricity-collecting network atop the mushroom's cap by acting like a nano-probe — to access bio-electrons generated inside the cyanobacterial cells.
- Next, they printed a" bio-ink" containing cyanobacteria onto the mushroom's cap in a spiral pattern intersecting with the electronic ink at multiple contact points. At these locations, electrons could transfer through the outer membranes of the cyanobacteria to the conductive network of graphene nanoribbons. Shining a light on the mushrooms activated cyanobacterial photosynthesis, generating a photocurrent.

Significance and applications of Bionic mushrooms:

- This bionic mushroom produces electricity. By integrating cyanobacteria that can produce electricity, with nanoscale materials capable of collecting the current, researchers were able to better access the unique properties of both, augment them, and create an entirely new functional bionic system.
- The amount of electricity these bacteria produce can vary depending on the density and alignment with which they are packed, such that the more densely packed together they are, the more electricity they produce.

TOPIC: GS III, AWARENESS IN SPACE

24. NASA's Ralph and Lucy set to visit Jupiter's Trojan asteroids in 2021

Source: India Today

Why the news:

NASA's Ralph and Lucy are all set to explore Jupiter's Trojan asteroids, which are remnants from the earliest days of our solar system.

- Ralph is a space instrument that has travelled as far as Pluto, while Lucy is a mission payload, or the spacecraft which would be carrying various scientific instruments including Ralph to study the properties of the asteroids.
- The mission will be launched in 2021 and would be the very first space mission to study the Trojans.

About Jupiter's Trojan asteroids:

The Trojan asteroids are orbit Sun in two loose groups — one group is always ahead of Jupiter (called the Greek camp) in its path while the other is always behind (called the Trojan camp). The two clusters are stabilized at these two Lagrange points in a gravitational balancing act between the Sun and Jupiter.

- As per the NASA all of the Trojans are thought to be abundant in dark carbon compounds. Below an insulating blanket of dust, they are probably rich in water and other volatile substances.
- The Trojan asteroids in Jupiter's orbit could be made from the same material as the outer planets which were formed during the birth of the solar system more than 4 billion years ago.

What are Lagrange points?

- Lagrange points are sweet spots in a planetary orbit where the pull of gravity working from two opposing celestial bodies is balanced due to the centripetal force of their orbits.

About mission Lucy to Jupiter's Trojan asteroids:

- The name Lucy' was taken from the name of the fossil of the earliest human ancestor yet discovered. Just like the finding of this skeleton had provided important insight into human evolution, scientists hope the Lucy mission will also be able to tell us more about our planetary origins.
- The Lucy mission will comprise a 12-year journey with a fly-by to seven different asteroids — six Trojan asteroids and a Main Belt asteroid — more than any other previous asteroid mission. The mission will get us up-close with both the clusters of Trojan asteroids.

The Lucy mission payload will explore the Trojan asteroids using:

1. The Long Range Reconnaissance Imager (L'LORRI).
2. The Thermal Emission Spectrometer (L'TES).
3. L'Ralph.

L'LORRI will take high-definition photos of the Trojans, and L'TES will analyze the heat given off of the Trojans' surface structures.

About NASA's scientific instrument Ralph:

- Ralph first launched aboard the New Horizons spacecraft in 2006 and obtained stunning flyby images of Jupiter and its moons.
- This was followed by a visit to Pluto where Ralph took the first high-definition pictures of the iconic minor planet.
- The instrument will fly by another Kuiper Belt object called 2014 MU69 — nicknamed Ultima Thule — in January 2019. Ralph's observations of 2014 MU69 will provide unique insights into this small, icy world.
- Ralph enables the study of the composition and atmospheres of celestial objects.

TOPIC: GS III, AWARENESS IN SPACE

25. China unveils new 'Heavenly Palace' space station

Source: The Hindu

Why the news:

China has unveiled a replica of its first permanently-crewed space station, which would replace the international community's orbiting laboratory- the International Space Station (ISS) and symbolises the country's major ambitions beyond Earth.

- It has cylindrical module representing the living and working quarters of the Tiangong — or "Heavenly Palace" — which will also have two other modules for experiments and will be equipped with solar panels.

About China's space station:

- It is a 17-metre core module.
- Three astronauts will be permanently stationed in the 60-tonne orbiting lab, which will enable the crew to conduct biological and microgravity research.
- Assembly is expected to be completed around 2022 and the station would have a lifespan of around 10 years.

Significance:

- The International Space Station – a collaboration between the United States, Russia, Canada, Europe and Japan – has been in operation since 1998 and is due to be retired in 2024. China will then have the only space station in orbit, though it will be much smaller than the ISS which weighs 400 tonnes and is as large as a football pitch.

Way ahead:

- The country had announced that the lab would be open to "all countries" to conduct science experiments. Research institutes, universities, and public and private companies have been invited to propose projects. It has received 40 plans from 27 countries and regions. The European Space Agency has sent astronauts to China to receive training in order to be ready to work inside the Chinese space station once it is launched.
- China is pouring billions into its military-run space programme, with plans to send humans to the Moon in the near future.

About the International Space Station (ISS):

- The International Space Station (ISS) is a space station, or a habitable artificial satellite, in low Earth orbit. The ISS is now the largest artificial body in orbit.
- The ISS consists of pressurised modules, external trusses, solar arrays and other components. ISS components have been launched by Russian Proton and Soyuz rockets as well as American Space Shuttles.
- The ISS serves as a microgravity and space environment research laboratory in which crew members conduct experiments in biology, human biology, physics, astronomy, meteorology and other fields.
- The station is suited for the testing of spacecraft systems and equipment required for missions to the Moon and Mars.
- The ISS maintains an orbit with an altitude of between 330 and 435 km by means of reboost manoeuvres using the engines of the Zvezda module or visiting spacecraft. It completes 15.54 orbits per day.
- ISS is the ninth space station to be inhabited by crews, following the Soviet and later Russian Salyut, Almaz, and Mir stations as well as Skylab from the US.
- The ISS programme is a joint project among five participating space agencies: NASA, Roscosmos, JAXA, ESA, and CSA.
- The ownership and use of the space station is established by intergovernmental treaties and agreements. The station is divided into two sections, the Russian Orbital Segment (ROS) and the United States Orbital Segment (USOS), which is shared by many nations.

TOPIC: GS III, AWARENESS IN THE FIELDS OF IT, COMPUTERS, ROBOTICS, NANO-TECHNOLOGY, BIO-TECHNOLOGY

26. SpiNNaker- World's largest brain-like supercomputer

Source: The Hindu

Why the news:

The world's largest neuromorphic supercomputer designed and built to work in the same way a human brain does has been fitted with its landmark one-millionth processor core and is being switched on for the first time.

- The newly formed million-processor-core 'Spiking Neural Network Architecture' or 'SpiNNaker' machine is capable of completing more than 200 million actions per second, with each of its chips having 100 million transistors.
- The SpiNNaker machine, designed and built in The University of Manchester in the UK, can model more biological neurons in real time than any other machine on the planet.

How the supercomputer is like a human brain?

Biological neurons are basic brain cells present in the nervous system that communicate primarily by emitting 'spikes' of pure electro-chemical energy.

Neuromorphic computing uses large scale computer systems containing electronic circuits to mimic these spikes in a machine.

- Researchers eventually aim to model up to a billion biological neurons in real time and are now a step closer. To give an idea of scale, a mouse brain consists of around 100 million neurons and the human brain is 1,000 times bigger than that.
- One billion neurons is one per cent of the scale of the human brain, which consists of just under 100 billion brain cells, or neurons, which are all highly interconnected via approximately one quadrillion synapses.

What is unique about SpiNNaker?

- SpiNNaker is unique because, unlike traditional computers, it doesn't communicate by sending large amounts of information from point A to B via a standard network. Instead, it mimics the massively parallel communication architecture of the brain, sending billions of small amounts of information simultaneously to thousands of different destinations.

Uses of the human brain-like supercomputer:

- One of the fundamental uses for the supercomputer is to help neuroscientists better understand how our own brain works. It does this by running extremely large scale real-time simulations which simply aren't possible on other machines.

  For example, SpiNNaker has been used to simulate high-level real-time processing in a range of isolated brain networks. This includes an 80,000 neuron model of a segment of the cortex, the outer layer of the brain that receives and processes information from the senses.

- It also has simulated a region of the brain called the Basal Ganglia – an area affected in Parkinson's disease, meaning it has massive potential for neurological breakthroughs in science such as pharmaceutical testing.
- The power of SpiNNaker has even recently been harnessed to control a robot, the SpOmnibot. This robot uses the SpiNNaker system to interpret real-time visual information and navigate towards certain objects while ignoring others.

VII. PRELIMS/MISCELLANEOUS

27. SIMBEX 18

- The 25th edition of SIMBEX (Singapore-India Maritime Bilateral Exercise) is being held off Andaman Sea and Bay of Bengal.
- SIMBEX 2018 will be the largest edition since 1994 in terms of scale and complexity.

28. INDRA 2018

- It is a joint military exercise between Indian and Russia on combating insurgency under the aegis of United Nations (UN).
- The latest edition is being conducted at Babina Field Firing Ranges, Babina Military Station.
- The aim of the exercise is to practice joint planning and conduct to enhance interoperability of the two Armies in the peace keeping/ enforcement environment under the aegis of the UN. It focuses upon training on enhancing team building, special tactical level operations such as Cordon and Search, house intervention, handling and neutralisation of Improvised Explosive Devices and integrated employment of force multipliers.

29. Naval Exercise 'Samudra Shakti'

- Indian Navy and Indonesian Navy have scheduled Bilateral Exercise 'Samudra Shakti'.
- The aim of the exercise is to strengthen bilateral relations, expand maritime co-operation, enhance interoperability and exchange best practices.
- The exercise seeks to promote India's solidarity with Indonesia towards ensuring good order in the maritime domain and to strengthen existing bonds between the navies of the two nations.

30. NASA to send organs on chips to space

- NASA is planning to send small devices containing human cells in a 3D matrix — known as tissue chips or organs-on-chips — to the International Space Station (ISS) to test how they respond to stress, drugs and genetic changes.
- Made of flexible plastic, tissue chips have ports and channels to provide nutrients and oxygen to the cells inside them.
- The "Tissue Chips in Space" initiative seeks to better understand the role of microgravity on human health.

31. World's first AI news anchor debuts in China

- The world's first artificial intelligence (AI) news anchor made "his" debut at the ongoing fifth World Internet Conference in east China's Zhejiang province.
- The AI news anchor was jointly developed by Xinhua and the Chinese search engine company, Sogou.com. The AI anchor has become a member of reporting team and can work 24 hours a day on its official website and various social media platforms, reducing news production costs and improving efficiency.
- The AI news anchor has a male image with a voice, facial expressions and actions of a real person.
- He learns from live broadcasting videos by himself and can read texts as naturally as a professional news anchor.

32. Nexxt Credit Card

- IndusInd Bank has launched first interactive Credit Card in India with buttons called IndusInd Bank Nexxt Credit Card.

- It will give customer multiple options on how to make a payment using his or her Credit Card.
- This Card has been created in partnership with Pittsburgh USA headquartered Dynamics Inc., which designs and manufactures intelligent, battery powered payment cards
- This interactive Credit Card provides customers with flexibility of three payment options at Point of Sale (POS) terminal – Credit, Converting Transactions into EMIs with 4 tenure options (6, 12, 18 & 24 months) or using accumulated Reward Points, by simply pushing a button on the card.
- It incorporates technology that indicates customer's desired payment choice using LED lights associated with three options. Using it customer does not need to fill any paperwork, or call their bank or log in to any banking channel to convert their POS transactions into EMIs or to redeem their Rewards Points.

33. India overtakes US to become 2nd largest smartphone market behind China

- According to research firm Canalys, India has overtaken US to become second largest smartphone market in the July-September 2018 quarter.
- India saw shipment of 40.4 million units during third quarter and was second to China where 100.6 million smartphones were shipped. Smartphone shipment in US was at 40 million units.
- Worldwide smartphone shipments fell by 7.2% year-on-year to 348.9 million units during July-September 2018, a fourth consecutive quarter of decline.

Question:

1. How far do you agree with the concept of greater Nagalim? Do you think that early implementation of Naga peace accord is essential for a peaceful North East?
2. Despite a wide range of vaccination, diarrhoea and Pneumonia are rampant in India. Why? Suggest measures to make the immunization programme more efficient.
3. Do you think that Moscow format is beneficial for all its stakeholders? Is it in consonance with India's changed Afghanistan policy?
4. What is RCEP? What are its advantages? Critically analyse India's concerns for RCEP.