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Comprehensive NEWS Analysis

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GENERAL STUDIES


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- ANTHROPOLOGY
- POLITICAL SCIENCE
- TELUGU LITERATURE
- HISTORY

Contents

Polity and Governance

1. Regional connectivity scheme (RCS)

Context:

Opening the third round of the Regional connectivity scheme (RCS), the Ministry of Civil Aviation has invited proposals for air routes that include tourist destinations. The deadline for submitting applications is November 20.

- Under this scheme, the government has allowed seaplanes to operate commercial passenger flights. Included among the 10 destinations that the government proposes to connect through seaplanes are the recently unveiled Statue of Unity at Sardar Sarovar Dam, Sabarmati Riverfront in Ahmedabad, Tehri Dam in Uttarakhand and Nagarjuna Sagar in Telangana.

About UDAN (Ude Desh ka Aam Nagrik) scheme:

- UDAN (Ude Desh Ka Aam Nagrik) is the Government's initiative to make air travel to India's tier II and tier III cities affordable to the aam aadmi. The idea is to put smaller cities and remote regions on the aviation map, by getting domestic airlines to ply more regional routes.
- Under the scheme, the Government offers incentives to airlines to flag off new flights to neglected smaller cities and towns by providing Viability Gap Funding to make these operations profitable.
- Airlines are required to bid for exclusive rights to fly on the regional routes opened up under the scheme. They must sell a specific number of seats on each flight at a fixed fare of ₹ 2,500 for one hour of flying. In the case of helicopter operations, allowed for the first time now, fares are capped at ₹ 2,500 for a 30-minute flight.

Objectives of the scheme:

- The primary objective of RCS is to facilitate / stimulate regional air connectivity by making it cheap and affordable.

- Promoting affordability of regional air connectivity is envisioned under RCS by supporting airline operators through: Concessions and Financial (viability gap funding or VGF) support.
- The scheme gives India's aviation sector a boost by giving a chance to small and first-time operators to be a part of the rapid growth in passenger traffic.

2. Border Area Development Programme (BADP)

Context:

The Centre has released more than Rs. 113 crore to to Assam, Nagaland, Sikkim, Gujarat, Rajasthan and Uttarakhand under the Border Area Development Programme (BADP).

- The home ministry, till now, has released a total of Rs. 637.98 crore during the 2018-19 period to states having an International Border. The funds released are in addition to the Rs. 1,100-crore released in 2017-18 for the all-round development of villages located along the International Border in 17 states.

About Border Area Development Programme (BADP):

- The Border Area Development Programme (BADP) has been implemented through 17 States (viz. Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttar Pradesh, Uttarakhand and West Bengal) which constitute the International Land Borders.
- The main objective of the BADP is to meet the special developmental needs and well-being of the people living in remote and inaccessible areas situated near the international border and to saturate the border areas with the entire essential infrastructure through convergence of Central/ State/ BADP/ Local schemes and participatory approach.

Funding and schemes covered:

- The funds under BADP are provided to the States as a 100% non-lapsable Special Central Assistance. The programme is supplemental in nature and the budget allocation for the financial year 2015-16 is Rs.990 crore.
- The BADP schemes include construction of primary health centres, schools, supply of drinking water, community centres, connectivity, and drainage to enable sustainable living in border areas.
- It also covers schemes or activities relating to Swachhta Abhiyan, skill development programmes, promotion of sports activities in border areas, promotion of rural tourism, border tourism, protection of heritage sites, and construction of helipads in remote and inaccessible hilly areas, which do not have road connectivity.

3. India's nuclear triad is complete

Context:

India has declared that its nuclear triad, stated in its nuclear doctrine, is operational after indigenous ballistic missile nuclear submarine INS Arihant recently achieved a milestone by conducting its first deterrence patrol.

- The submarine recently returned from its first deterrence patrol, completing the establishment of the country's survivable nuclear triad. INS Arihant is now capable of prowling the deep seas carrying ballistic missiles equipped with nuclear warheads.
- This places India in the league of the few countries that can design, construct and operate ship submersible ballistic nuclear (SSBN).
- Given India's stated position of 'No-First-Use' (NFU) in launching nuclear weapons, the ship submersible ballistic nuclear (SSBN) is the most dependable platform for a second-strike. Because they are powered by nuclear reactors, these submarines can stay underwater indefinitely without the adversary detecting it. The other two platforms — land-based and air-launched are far easier to detect.

About INS Arihant:

- Arihant was commissioned into service in August 2016. It has a displacement of 6000 tonnes and is powered by an 83 MW pressurised light-water reactor with enriched uranium.

India's NFU:

- In 1998, India conducted nuclear tests under Pokhran-II and in 2003, it declared its nuclear doctrine based on credible minimum deterrence and a NFU policy while reserving the right of massive retaliation if struck with nuclear weapons first.

What is no first use nuclear doctrine?

- No first use (NFU) refers to a pledge or a policy by a nuclear power not to use nuclear weapons as a means of warfare unless first attacked by an adversary using nuclear weapons. Earlier, the concept had also been applied to chemical and biological warfare.
- India first adopted a "No first use" policy after its second nuclear tests, Pokhran-II, in 1998. In August 1999, the Indian government released a draft of the doctrine which asserts that nuclear weapons are solely for deterrence and that India will pursue a policy of "retaliation only".
- The document also maintains that India "will not be the first to initiate a nuclear first strike, but will respond with punitive retaliation should deterrence fail" and that decisions to authorise the use of nuclear weapons would be made by the Prime Minister or his 'designated successor(s)'.

Why India should retain this policy?

- Adopting a no-first use policy enables New Delhi to keep the nuclear threshold high, especially as Pakistan tries to lower the threshold by developing tactical nuclear weapons, the Hatf-9 with 60km range.
- It must also be noted that New Delhi is not bordered by just one nuclear weapon state. China adopts a no-first use policy and, in spite of calls for Beijing to revise its no-first use doctrine, it is unlikely to do so. Hence, if New Delhi gave up its no-first use doctrine, it could give Beijing a chance to adopt a first strike policy and shift blame on India.
- In fact, India's adoption of a first strike policy would be an easy excuse for Beijing to give up its no-first use doctrine against the United States and Russia as well.
- Moreover, India has always promoted herself as a responsible nuclear weapon state. Hence, a first strike policy would severely damage India's reputation as a responsible nuclear weapon state. This means that while India would not be resilient to any nuclear attack by its adversaries, at the same time, it will not act as a villain who tries to bully its adversaries by threatening to strike first.
- Also, it is India's no first use doctrine that has enabled both Pakistan and India to keep their nuclear arsenal in a de-mated posture rather than a ready deterrent posture. This means nuclear warheads are not mated with the delivery systems. This reduces the chances of nuclear terrorism in Pakistan and also reduces the likelihood of an accidental launch of a nuclear weapon. A first strike policy by India may not have allowed Pakistan to keep their nuclear arsenal in a de-mated posture.
- There is also the issue of ballistic missile defense being developed by India which is highly destabilizing in nature and hence, New Delhi would continue to resort to using its no-first use doctrine in order to prevent instability in the South Asian region. A first-strike policy,

coupled with a ballistic missile defense system, could provoke Pakistan to launch a nuclear pre-emptive strike against India.

- By adopting a no-first use doctrine, New Delhi has also made it evident that nuclear weapons are indeed the weapons of last resort. Abandoning this doctrine would make it evident that India considers the option of using nuclear weapons in the initial phases of the conflict. In fact, India's nuclear strategy is dependent on punitive retaliation. This strategy itself acts as deterrence against Pakistan.

4. Gujarat government wants to rename Ahmedabad as Karnavati

Context:

Gujarat government is planning to rename Ahmedabad as Karnavati.

- Historically, the area around Ahmedabad has been inhabited since the 11th century, when it was known as Ashaval.
- Chaulukya ruler Karna of Anhilwara (modern Patan) had waged a successful war against the Bhil king of Ashaval and established a city called Karnavati on the banks of the Sabarmati river.
- Sultan Ahmed Shah in 1411 A.D. Had laid the foundation of a new walled city near Karnavati and named it Ahmedabad after the four saints in the area by the name Ahmed.

5. Competition Commission of India

Context:

A 'National Conference on Public Procurement & Competition Law' is being organised by the Competition Commission of India (CCI) with a view to scale up Competition Advocacy and reach out to important stakeholders in public procurement ecosystem.

- The National Conference is being organised in association with Indian Institute of Corporate Affairs (IICA), a think tank under the aegis of Ministry of Corporate Affairs.

About Competition Commission Of India:

- The Competition Commission of India (CCI) was established under the Competition Act, 2002 for the administration, implementation and enforcement of the Act, and was duly constituted in March 2009. Chairman and members are appointed by the central government.
- **The following are the objectives of the Commission:**
  - To prevent practices having adverse effect on competition.
  - To promote and sustain competition in markets.
  - To protect the interests of consumers.
  - To ensure freedom of trade.

- **Functions of the commission:**
  - It is the duty of the Commission to eliminate practices having adverse effect on competition, promote and sustain competition, protect the interests of consumers and ensure freedom of trade in the markets of India.
  - The Commission is also required to give opinion on competition issues on a reference received from a statutory authority established under any law and to undertake competition advocacy, create public awareness and impart training on competition issues.

The Competition Act:

The Competition Act, 2002, as amended by the Competition (Amendment) Act, 2007, prohibits anti-competitive agreements, abuse of dominant position by enterprises and regulates combinations (acquisition, acquiring of control and M&A), which causes or likely to cause an appreciable adverse effect on competition within India.

Committee to review the Act:

In pursuance of its objective of ensuring that Legislation is in sync with the needs of strong economic fundamentals, the Government recently constituted a Competition Law Review Committee to review the Competition Act headed by Secretary, Ministry of Corporate Affairs.

6. Saura Jalnidhi scheme

Context:

Odisha Government has launched Saura Jalnidhi scheme to encourage use of solar energy in irrigation by farmers.

- The beneficiary of this scheme will be farmers who have valid farmer identity cards and have minimum 0.5 acres of agricultural land.
- Under this scheme, farmers will be given 90% subsidy and 5,000 solar pumps. This will provide irrigation benefits in 2,500 acres of the state.
- In the first phase, this scheme will be available in those areas where electricity is not available for running the pump set.

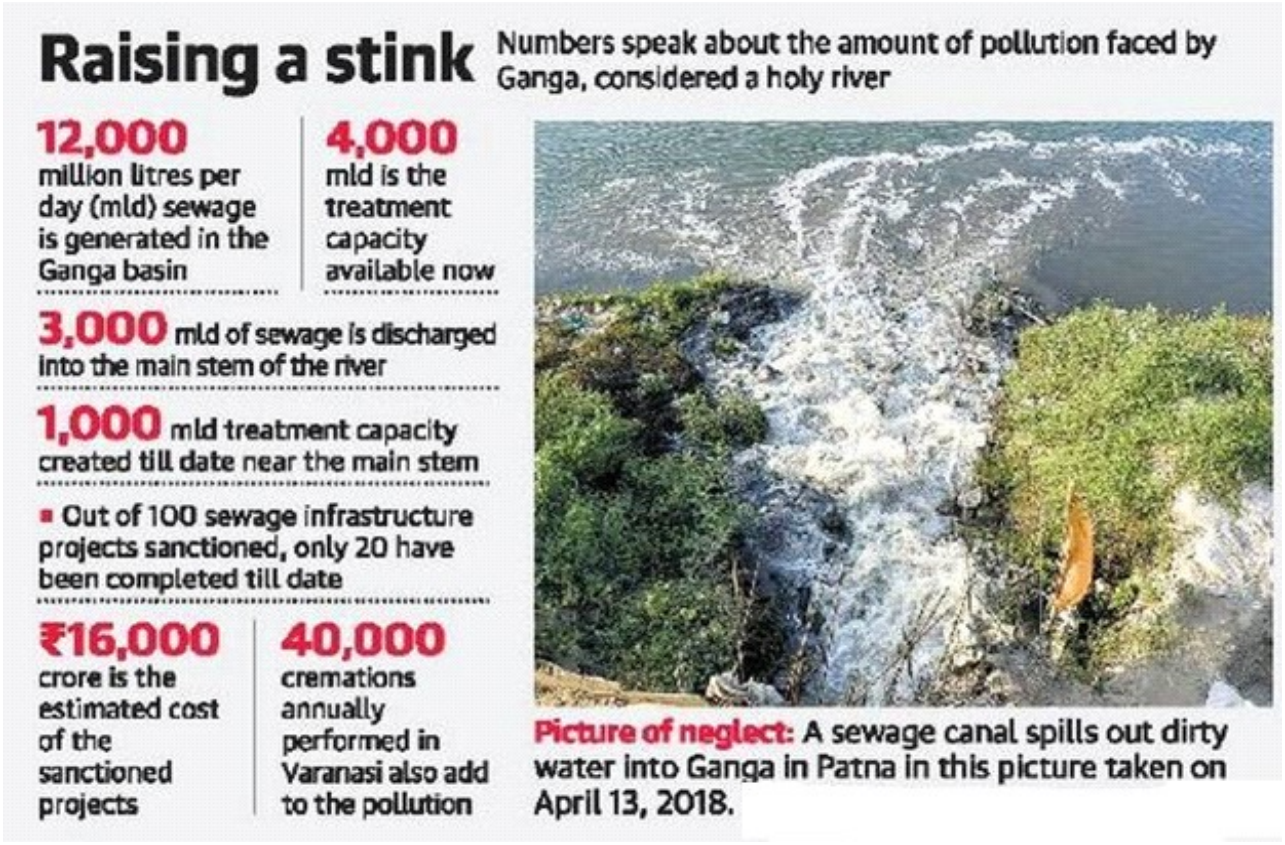
Significance of the scheme:

- The scheme will generate 1.52 lakh human day employments annually and provided livelihood to around 5,000 families and also reduce carbon footprints.
- Under this scheme, farmers will be provided with a well-equipped solar pump irrigation system in convergence mode. It will help to reduce burden of input cost on farmers and also increase agricultural income. It will promote the use of green energy and reduce pollution.

7. Ganga Gram Project

Context:

Ganga Gram Swachchhata Sammelan was recently organized at Chyavan Rishi Ashram in Chousa Village of Buxar district in Bihar.



About Ganga Gram project:

- Ganga Gram vision is an integrated approach for holistic development of villages situated on the banks of River Ganga with active participation of the villagers.
- The objectives of Ganga Gram Project include solid and liquid waste management, renovation of ponds and water resources, water conservation projects, organic farming, horticulture, and promotion of medicinal plants.

About Namami Gange Programme:

- Namami Gange programme was launched as a mission to achieve the target of cleaning river Ganga in an effective manner with the unceasing involvement of all stakeholders, especially five major Ganga basin States – Uttarakhand, Uttar Pradesh, Jharkhand, Bihar and West Bengal. The programme envisages: River Surface Cleaning, Sewerage Treatment Infrastructure, River Front Development, Bio-Diversity, Afforestation and Public Awareness.

Implementation:

- The program would be implemented by the National Mission for Clean Ganga (NMCG), and its state counterpart organizations i.e., State Program Management Groups (SPMGs). In order to improve implementation, a three-tier mechanism has been proposed for project monitoring comprising of a) High level task force chaired by Cabinet Secretary assisted by NMCG at national level, b) State level committee chaired by Chief Secretary assisted by SPMG at state level and c) District level committee chaired by the District Magistrate.
- The program emphasizes on improved coordination mechanisms between various Ministries/Agencies of Central and State governments.

International Relations

8. South Asian Association for Regional Cooperation (SAARC)

Context:

Giving a boost to China's long standing demand, Pakistan recently said that it supported active participation of China at the platform of the South Asian Association for Regional Cooperation (SAARC).

- China has a status of an observer state in South Asia, however an observer state can get involve with SAARC members on specific initiatives, but they do not have voting rights. China entered SAARC as an observer in 2005, supported by most member states.

India's concerns and fears:

- If China is given a greater role, India fears that its neighbours will come together to oppose the country's interests, particularly under the influence of Pakistan and China. India's neighbours are attracted to China, because of its greater economic resources, as also it has the potential to counter India. China's influence can be witnessed even in Nepal. To enhance strategic ties with Nepal, China has been investing heavily in that country; it has opened land-port between Nepal and Tibet named as Kyirong which will affect the regional strategic balance.
- The growing friendship with China and Pakistan is viewed by many as a joint tactic to offset India's dominance in the South Asian region. One of the most famous project, is China-Pakistan Economic Corridor (CPEC) which strategically aims at providing links between the overland Silk Road and maritime Silk Road. Due to this project China becomes one of the major investors in Pakistan.
- It has been agreed that China's entry in SAARC as a full-member can give a push to SAARC to grow as a regional bloc as China's global economic influence can help SAARC in international forum. But, growing alliances between China and Pakistan may work against India and which will hamper the regional progress. It has also been feared that China may block the projects which are both strategically and economically important for India.

Way ahead:

- China is becoming member of different regional blocs due to its growing economic and military might. China's active and aggressive diplomacy, trade and investments, many cooperative agreements with SAARC nations is thus enabling it to have a greater influence in south Asia.
- India needs to re-think its regional strategies as rise of China will impact India. Often it is viewed that the rise of China will decrease India's influence in South Asia.

About SAARC:

- The South Asian Association for Regional Cooperation (SAARC) was established with the signing of the SAARC Charter in Dhaka on 8 December 1985. The Secretariat of the Association was set up in Kathmandu on 17 January 1987.
- SAARC comprises of eight Member States: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.
- Important objectives of the Association as outlined in the SAARC Charter are: to promote the welfare of the peoples of South Asia and to improve their quality of life; to accelerate economic growth, social progress and cultural development in the region and to provide all individuals the opportunity to live in dignity and to realize their full potentials; to promote and strengthen collective self-reliance among the countries of South Asia.

9. First India-Nepal passenger train on broad gauge to make first run in December

Context:

The first passenger train to run on broad gauge between India and Nepal will run from December this year.

- The train will run from Jayanagar in Bihar to Kurtha in Dhanusa district in Janakpur Zone of south-eastern Nepal, which is a 34 km stretch.
- No visa will be required for Indian and Nepalese nationals crossing the border through this stretch.

Significance:

- After Beijing decided to extend its railway network up to Kathmandu, New Delhi proposed the construction of new railway links during Prime Minister K P Sharma Oli's recent visit to India. The move is being seen as part of efforts to counter China's plans to forge rail links with Nepal.

10. Chabahar port

Context:

The United States has exempted India from imposition of certain sanctions for the development of the strategically-located Chabahar port in Iran, along with the construction of the railway line connecting it with Afghanistan.

- The decision by the Trump administration is a seen as a recognition by Washington of India's role in development of the port on the Gulf of Oman, which is of immense strategic importance for the development of war-torn Afghanistan.

Background:

- The US has imposed "the toughest ever" sanctions on a defiant Iran aimed at altering the Iranian regime's "behaviour". The sanctions cover Iran's banking and energy sectors and reinstate penalties for countries and companies in Europe, Asia and elsewhere that do not halt Iranian oil imports.

Where is Chabahar port?

- Iran's Chabahar port is located on the Gulf of Oman and is the only oceanic port of the country. The port gives access to the energy-rich Persian Gulf nations' southern coast and India can bypass Pakistan with the Chabahar port becoming functional.

Why Chabahar port is crucial for India?

- The first and foremost significance of the Chabahar port is the fact that India can bypass Pakistan in transporting goods to Afghanistan. Chabahar port will boost India's access to Iran, the key gateway to the International North-South Transport Corridor that has sea, rail and road routes between India, Russia, Iran, Europe and Central Asia.
- Chabahar port will be beneficial to India in countering Chinese presence in the Arabian Sea which China is trying to ensure by helping Pakistan develop the Gwadar port. Gwadar port is less than 400 km from Chabahar by road and 100 km by sea.
- With Chabahar port being developed and operated by India, Iran also becomes a military ally to India. Chabahar could be used in case China decides to flex its navy muscles by stationing ships in Gwadar port to reckon its upper hand in the Indian Ocean, Persian Gulf and Middle East.
- With Chabahar port becoming functional, there will be a significant boost in the import of iron ore, sugar and rice to India. The import cost of oil to India will also see a considerable decline. India has already increased its crude purchase from Iran since the West imposed ban on Iran was lifted.
- Chabahar port will ensure in the establishment of a politically sustainable connectivity between India and Afghanistan. This is will, in turn, lead to better economic ties between the two countries.
- From a diplomatic perspective, Chabahar port could be used as a point from where humanitarian operations could be coordinated.

11. Quad countries to focus on maritime security

Context:

The "Quad" countries, namely India, US, Japan and Australia, will hold their next meeting on the sidelines of the 13 th East Asia Summit at Singapore in mid-November, with the grouping keen to step-up maritime

security and disaster relief initiatives as well as economic development projects in the critical Indo-Pacific region.

The Quad:

- Regional coalition known as the 'Quad', the quadrilateral formation includes Japan, India, United States and Australia.
- All four nations find a common ground of being the democratic nations and common interests of unhindered maritime trade and security.
- The idea was first mooted by Japanese Prime Minister Shinzo Abe in 2007. However, the idea couldn't move ahead with Australia pulling out of it.

Significance Quad- grouping for the US:

- The US believes the Quad, as one of the elements of its larger Indo-Pacific strategy for "a free, open and rules-based order" in face of an aggressive and expansionist China in the region, should eventually evolve into a ministerial-level dialogue imbued with a strong military dimension.
- But Washington also recognizes that New Delhi for now remains opposed to any militarization of the Quad, which was revived after a decade as a joint secretary-level dialogue in November 2017, with its second meeting being held in June this year. India has also made it clear that the US should not "conflate" the Indo-Pacific with the Quad, stressing the centrality of Asean in the former.

Way ahead:

- Quad is an opportunity for like-minded countries to share notes and collaborate on projects of mutual interest. All four countries share a vision of an open and free Indo-Pacific. Each is involved in development and economic projects as well as in promoting maritime domain awareness and maritime security.
- The Quad grouping is one of the many avenues for interaction among India, Australia, Japan and the US and should not be seen in an exclusive context. Quad should not be seen in any comparative or in an exclusive context.

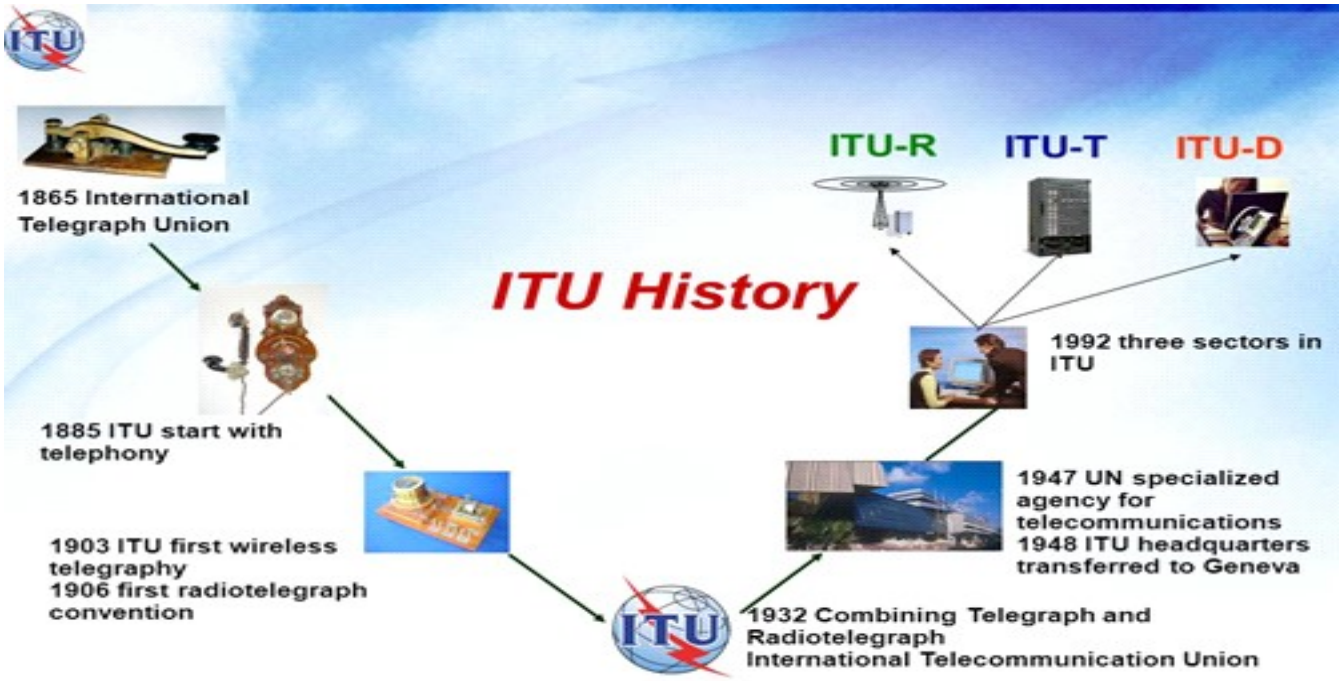
Maritime security and the need for it:

- With a vast coastline of about 7600 kilometres, island territories on both sides of the peninsula are sizeable Exclusive Economic Zone and sea borne trade, the greater part of which moves by ship; there are many strands to India's composite maritime security including the safety of major ports plus aircraft carriers and nuclear submarines at strategic levels.

12. International Telecommunications Union (ITU)

Context:

India has been elected as a Member of the International Telecommunications Union (ITU) Council for another 4-year term (2019-2022). The elections to the Council were held during the ongoing ITU Plenipotentiary Conference 2018 at Dubai, UAE.



- By securing 165 votes, India ranked third among the 13 countries elected to the Council from the Asia-Australasia region, and eighth among the 48 countries elected to the Council globally. The ITU has 193memberstates who elect representatives to the Council.

About International Telecommunication Union (ITU):

- The International Telecommunication Union (ITU) is an agency of the United Nations (UN) whose purpose is to coordinate telecommunication operations and services throughout the world. Originally founded in 1865, as the International Telegraph Union, the ITU is the oldest existing international organization. ITU headquarters are in Geneva, Switzerland.

The ITU consists of three sectors:

- Radiocommunication (ITU-R) — ensures optimal, fair and rational use of the radio frequency (RF) spectrum.
- Telecommunication Standardization (ITU-T) — formulates recommendations for standardizing telecommunication operations worldwide.
- Telecommunication Development (ITU-D) — assists countries in developing and maintaining internal communication operations.

Membership:

- There are 193 Member States of the ITU, including all UN member states except the Republic of Palau, plus the Vatican City.
- Membership of ITU is open to only UN members, which may join the Union as Member States, as well as to private organizations like carriers, equipment manufacturers, funding bodies, research and development organizations and international and regional telecommunication organizations, which may join ITU as non-voting Sector Members.

Functions:

- The ITU sets and publishes regulations and standards relevant to electronic communication and broadcasting technologies of all kinds including radio, television, satellite, telephone and the Internet.
- The organization conducts working parties, study groups and meetings to address current and future issues and to resolve disputes. The ITU organizes and holds an exhibition and forum known as the Global TELECOM every four years.
- Another important aspect of the ITU's mandate is helping emerging countries to establish and develop telecommunication systems of their own.
- Although the recommendations of the ITU are non-binding, most countries adhere to them in the interest of maintaining an effective international electronic communication environment.

13. United Nations Postal System

Context:

United Nations Postal Administration (UNPA) has issued special stamps with Diyas lamps to commemorate India Hindu festival of Diwali.

- The special event sheet (stamps) issued by UNPA are in denomination of US $1.15.
- It contains ten stamps and tabs featuring festive lights and symbolic lamps known as diyas.
- The background of sheet features United Nations Headquarters building illuminated with message of "Happy Diwali" to celebrate the spirit of the festival.
- The description accompanying information about stamps mentioned that Diwali, also known as Deepawali is joyous and popular festival of lights, which is celebrated in India and by followers of many faiths across the world.
- It also said that during celebration clay lamps known as diyas are lit to signify the victory of good over evil. The festival also symbolises start of New Year for many communities.

About United Nations Postal Administration (UNPA):

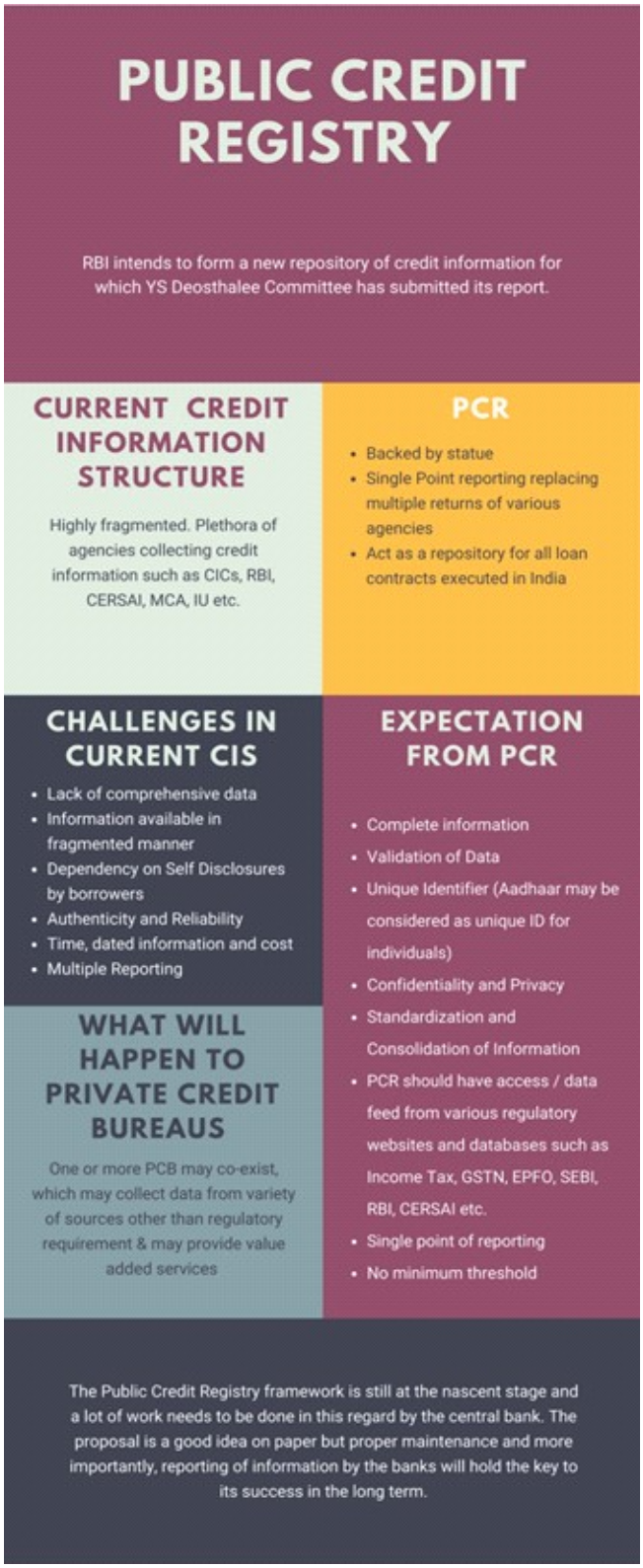
- It is postal agency of United Nations. It issues postage stamps and postal stationery, denominated in United States dollars for United Nations offices in New York, in Swiss francs for offices in Geneva and in euros for the offices in Vienna. Postage rates charged are identical to those of the host nation.

Economy

14. Public Credit Registry (PCR)

Context:

The Reserve Bank has initiated steps to set up a wide-based digital Public Credit Registry (PCR) to capture details of all borrowers, including wilful defaulters and also the pending legal suits in order to check financial delinquencies.



- The PCR will also include data from entities like market regulator SEBI, the Corporate Affairs Ministry and the Insolvency and Bankruptcy Board of India to enable banks and financial institutions to get a 360-degree profile of existing and prospective borrowers on a real-time basis.

About Public Credit Registry:

- The PCR will be an extensive database of credit information for India that is accessible to all stakeholders. The idea is to capture all relevant information in one large database on the borrower and, in particular, the borrower's entire set of borrowing contracts and outcomes.

Management of PCR:

- Generally, a PCR is managed by a public authority like the central bank or the banking supervisor, and reporting of loan details to the PCR by lenders and/or borrowers is mandated by law.
- The contractual terms and outcomes covered and the threshold above which the contracts are to be reported vary in different jurisdictions, but the idea is to capture all relevant information in one large database on the borrower, in particular, the borrower's entire set of borrowing contracts and outcomes.

Need for a PCR:

- A central repository, which, for instance, captures and certifies the details of collaterals, can enable the writing of contracts that prevent over-pledging of collateral by a borrower. In absence of the repository, the lender may not trust its first right on the collateral and either charge a high cost on the loan or ask for more collateral than necessary to prevent being diluted by other lenders. This leads to, what in economics is termed as, pecuniary externality – in this case, a spillover of one loan contract onto outcomes and terms of other loan contracts.
- Furthermore, absent a public credit registry, the 'good' borrowers are disadvantaged in not being able to distinguish themselves from the rest in opaque credit markets; they could potentially be subjected to a rent being extracted from their existing lenders who enjoy an information monopoly over them. The lenders may also end up picking up fresh clients who have a history of delinquency that is unknown to all lenders and this way face greater overall credit risk.

Benefits of having a PCR:

- A PCR can potentially help banks in credit assessment and pricing of credit as well as in making risk-based, dynamic and counter-cyclical provisioning.
- The PCR can also help the RBI in understanding if transmission of monetary policy is working, and if not, where are the bottlenecks.
- Further, it can help supervisors, regulators and banks in early intervention and effective restructuring of stressed bank credits.
- A PCR will also help banks and regulators as credit information is a 'public good' and its utility is to the credit market at large and to society in general.

Task force on PCR:

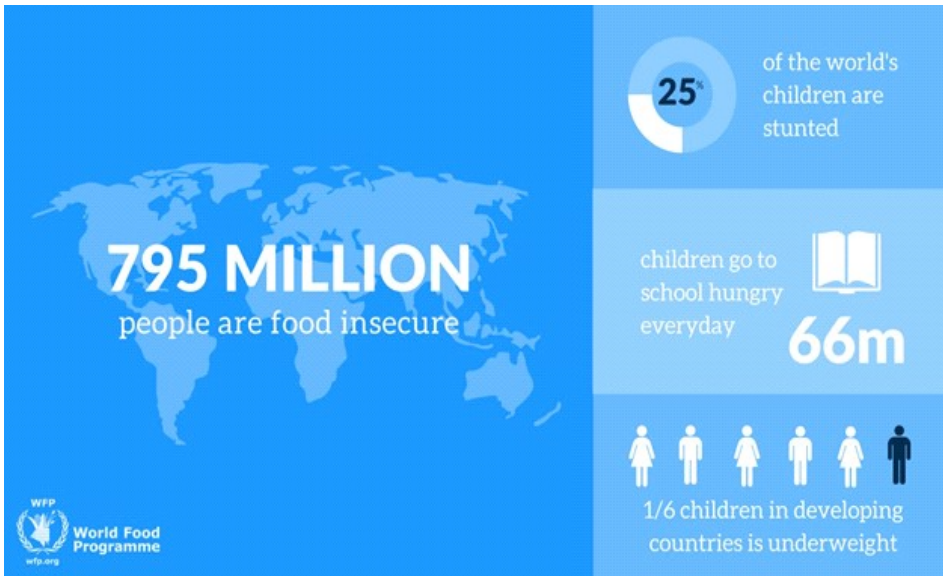
- The Reserve Bank of India (RBI) had formed a high-level task force on public credit registry (PCR) for India. The task force was chaired by Y M Deosthalee.
- The task force has suggested the registry should capture all loan information and borrowers be able to access their own history. Data is to be made available to stakeholders such as banks, on a need-to-know basis. Data privacy will be protected.

15. World Food Programme (WFP)

Context:

United Nations World Food Programme (WFP) and Chinese e-commerce giant Alibaba Group have formed strategic partnership to support efforts eliminate hunger globally by 2030.

- As per the agreement, Alibaba will lend its cutting-edge technology and resources to support digital transformation of WFP's operations.



"World Hunger Map":

- Alibaba Cloud, the cloud computing arm of Alibaba will work with WFP to develop digital "World Hunger Map". The map will help to monitor global hunger and operations to end scourge by 2030 which is one of UN's key Sustainable Development goals. It also aims to boost efficiency of interventions and shorten emergency response times.

About WFP:

- The World Food Programme (WFP) is the food assistance branch of the United Nations and the world's largest humanitarian organization addressing hunger and promoting food security.
- The WFP strives to eradicate hunger and malnutrition, with the ultimate goal in mind of eliminating the need for food aid itself. It is a member of the United Nations Development Group and part of its Executive Committee.

- Born in 1961, WFP pursues a vision of the world in which every man, woman and child has access at all times to the food needed for an active and healthy life. The WFP is governed by an Executive Board which consists of representatives from member states.
- The WFP operations are funded by voluntary donations from world governments, corporations and private donors. WFP food aid is also directed to fight micronutrient deficiencies, reduce child mortality, improve maternal health, and combat disease, including HIV and AIDS.

16. Dredging Corporation Of India

Context:

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.

- The consortium of four ports consists of Vishakhapatnam Port Trust (Andhra Pradesh), Paradeep Port Trust (Odisha), Jawahar Lal Nehru Port Trust (Maharashtra) and Kandla Port Trust (Gujarat).

Present status:

- Presently, Central Government holds 73.44% shares in DCIL.

Benefits:

- 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.

17. Strategic Petroleum Reserves (SPR)

Context:

The Union Cabinet has approved the filling of Padur Strategic Petroleum Reserves (SPR) in Karnataka by overseas National Oil Companies (NOCs).

- The filling of the SPR will be under PPP model and is being undertaken to reduce budgetary support of Union Government. The SPR facility at Padur is underground rock cavern with total capacity of 2.5 million metric tonnes (MMT) having four compartments of 0.625 MMT each.

Background:

- India has built 5.33 million tons of underground reserves in three locations, including Padur, under an earlier phase that can meet 9.5 days of the country's oil needs. The government purchased crude to fill the caverns in Visakhapatnam in Andhra Pradesh and half of another facility in Mangalore in Karnataka, while leasing out the other half to Abu Dhabi National Oil Co.

About SPR programme:

- To ensure energy security, the Government of India had decided to set up 5 million metric tons (MMT) of strategic crude oil storages at three locations namely, Visakhapatnam, Mangalore and Padur (near Udupi). These strategic storages would be in addition to the existing storages of crude oil and petroleum products with the oil companies and would serve as a cushion during any external supply disruptions.
- In the 2017-18 budget, it was announced that two more such caverns will be set up Chandikhole in Jajpur district of Odisha and Bikaner in Rajasthan as part of the second phase.
- The construction of the Strategic Crude Oil Storage facilities is being managed by Indian Strategic Petroleum Reserves Limited (ISPRL), a Special Purpose Vehicle, which is a wholly owned subsidiary of Oil Industry Development Board (OIDB) under the Ministry of Petroleum & Natural Gas.

Need for strategic oil reserves:

- In 1990, as the Gulf war engulfed West Asia, India was in the throes of a major energy crisis. By all accounts India's oil reserves at the time were adequate for only three days. While India managed to avert the crisis then, the threat of energy disruption continues to present a real danger even today.
- It is unlikely that India's energy needs will dramatically move away from fossil fuels in the near future. Over 80% of these fuels come from imports, a majority of which is sourced from West Asia. This is a major strategic risk and poses a massive financial drain for an embattled economy and its growing current account deficit.
- To address energy insecurity, the Atal Bihari Vajpayee government mooted the concept of strategic petroleum reserves in 1998. Today, with India consuming upwards of four million barrels of crude every day (January 2015 figures), the case for creating such reserves grows stronger.

18. Government approves mechanism for sale of enemy shares

Context:

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).

Significance:

- The decision will lead to monetization 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 unutilized 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 properties Act:

- After the Indo-Pakistan War of 1965, the Enemy Property Act was enacted in 1968, which regulates such properties and lists the custodian's powers.
- 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.

Geography and Environment

19. Earth has three moons

Context:

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.

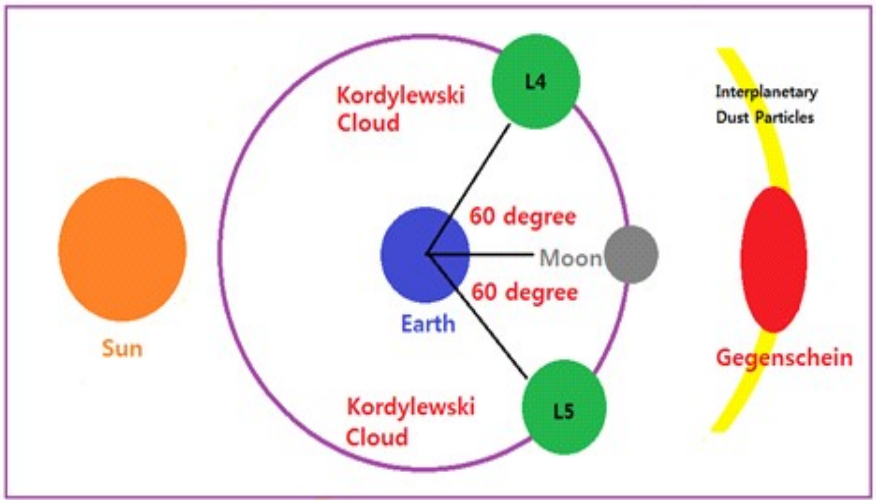
- The new moons exist at a distance of approximately 250,000 miles — more or less the same distance as our moon.
- The presence of the dust 'moons' or Kordylewski clouds had been inferred by researchers since long before. But the first glimpse of the clouds was seen only in 1961 by Polish astronomer Kazimierz Kordylewski, after whom the dust clouds were named.

Facts about the newly discovered dust moons:

- 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.

20. Operations Greens

Context:

Ministry of Food Processing Industries (MoFPI) has approved the operationalisation strategy for Operation Greens.

The Strategy will comprise of a series of measures as decided by the Ministry:

Short term Price Stabilization Measures:

- NAFED will be the Nodal Agency to implement price stabilization measures.
- MoFPI will provide 50 percent of the subsidy on transportation of Tomato Onion Potato (TOP) Crops from production to storage; and hiring of appropriate storage facilities for TOP Crops.

Long Term Integrated value chain development projects:

- Capacity Building of FPOs & their consortium.
- Quality production.
- Post-harvest processing facilities.
- Agri-Logistics.
- Marketing / Consumption Points.
- Creation and Management of e-platform for demand and supply management of TOP Crops.

About Operation Greens:

- Operation Greens was announced in the Budget speech of 2018-19 with an outlay of Rs 500 crores to stabilize the supply of Tomato, Onion and Potato (TOP) crops and to ensure availability of TOP crops throughout the country round the year without price volatility.

Major objectives of "Operation Greens" are as under:

- Enhancing value realization of TOP farmers by targeted interventions to strengthen TOP production clusters and their FPOs, and linking/ connecting them with the market.
- Price stabilization for producers and consumers by proper production planning in the TOP clusters and introduction of dual use varieties.
- Reduction in post-harvest losses by creation of farm gate infrastructure, development of suitable agro-logistics, and creation of appropriate storage capacity linking consumption centres.
- Increase in food processing capacities and value addition in TOP value chain with firm linkages with production clusters.
- Setting up of a market intelligence network to collect and collate real time data on demand and supply and price of TOP crops.

Significance of Operation greens:

- Operation Green (OG) wants to replicate the success story of Operation Flood, in fruits and vegetables, starting with three basic vegetables—tomatoes, onions and potatoes (TOP). The main objective of OG is to reduce price volatility in these commodities, and thereby helping farmers augment incomes on a sustainable basis, as also provide these basic vegetables to consumers at affordable prices.

21. National Mission for Clean Ganga (NMCG)

Context:

National Mission for Clean Ganga (NMCG) in partnership with HCL Foundation and German development agency GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) had organized "Bal Ganga Mela" at HCL's Noida campus on November 4, 2018.

- The Mela was organized with the objective to create awareness among school children on the importance of water in general and rivers in particular, so that they understand the importance of unpolluted, clean water and water security.
- Also, to foster respect for the natural environment and motivate children to become ambassadors of change, who influence and motivate others towards river rejuvenation and water conservation.
- November 4 is symbolic as it marks the declaration of Ganga as the National River of India in 2008 and is dedicated to raising awareness about rejuvenating the holy river and teaching children to become environmentally aware and responsible citizens.

About NMCG:

- The National Mission for Clean Ganga (NMCG) is the implementation wing of National Ganga Council which was set up in October 2016 under the River Ganga (Rejuvenation, Protection and Management) Authorities order 2016. The order dissolved National Ganga River Basin Authority.
- NMCG has a two tier management structure and comprises of Governing Council and Executive Committee. Both of them are headed by Director General, NMCG. Executive Committee has been authorized to accord approval for all projects up to Rs.1000 crore.
- The order envisages five tier structure at national, state and district level to take measures for prevention, control and abatement of environmental pollution in river Ganga and to ensure continuous adequate flow of water so as to rejuvenate the river Ganga as below:
- National Ganga Council under chairmanship of Hon'ble Prime Minister of India.
- Empowered Task Force (ETF) on river Ganga under chairmanship of Hon'ble Union Minister of Water Resources, River Development and Ganga Rejuvenation.
- National Mission for Clean Ganga(NMCG).
- State Ganga Committees.
- District Ganga Committees in every specified district abutting river Ganga and its tributaries in the states.

22. National River Ganga (Rejuvenation, Conservation and Management) Bill, 2018

Context:

The government is planning to introduce the National River Ganga (Rejuvenation, Conservation and Management) Bill, 2018 in the upcoming parliament winter session.

Highlights of the Bill:

- The bill propose to ban the construction of jetties, ports or "permanent hydraulic structures" in the Ganga, unless permitted by the National Ganga Rejuvenation Authority.
- It proposes to create a management structure that will supervise the health of the 2,500-kilometre long Ganga which, the draft Bill defines, as 'India's national river.'
- The Bill lays down a host of restrictions to ensure the "uninterrupted, ecological flow" of the river. Currently, a host of dams in the upper stretches of the river lead to the river's flow being obstructed.
- The proposed legislation specifies that "unauthorized" activities that cause obstruction or discontinuity of water in the River Gang due to engineered diversion of water or stoppage of water. Carrying out such activities are liable to a prison term of 3 years or fines upto ₹ 50 crore, or both.
- The Armed Ganga Protection Corps (GPC) personnel will be provided by the ministry of home affairs and will be deployed by the National Ganga Rejuvenation Authority. The GPC personnel will have power to arrest those who pollute the river covering offences like obstructing the flow of the river to commercial fishing.

The Bill has listed out a list of offences marked as cognizable which includes:

- Construction activities causing obstruction in the river.
- Withdrawal of ground water for industrial or commercial consumption from the land fronting the river and its tributaries.
- Commercial fishing or aqua culture in the river and its tributaries.
- Discharging untreated or treated sewage into the river.

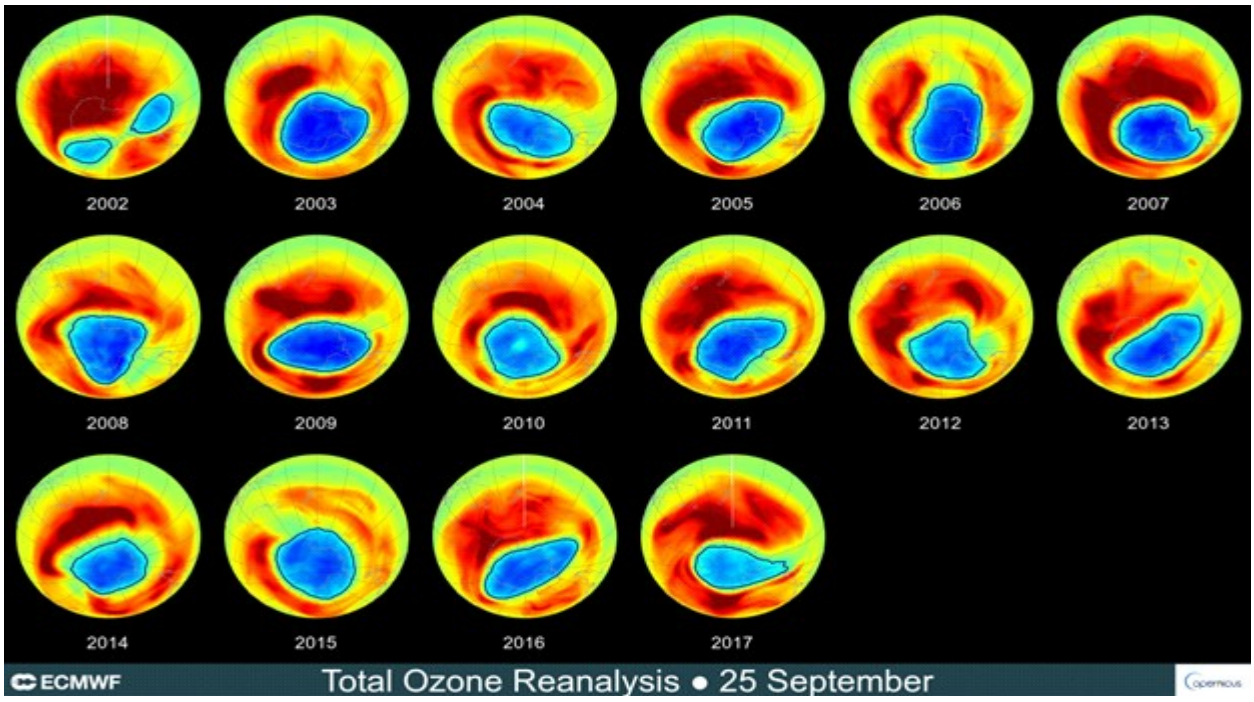
Background:

- In July 2016, a committee was constituted under retired judge of the Allahabad High Court Justice Girdhar Malviya who had submitted a draft Bill last year named The National River Ganga (Rejuvenation, Protection and Management) Bill, 2017. Subsequently, a four-member committee was set up by the Ministry to examine that and the Ministry has circulated a Cabinet note which includes a revised version of that draft Bill.

23. Ozone hole

Context:

A recent study by NASA has confirmed the recovery of the ozone layer due to the absence of chlorine from Chlorofluorocarbon (CFC) in the atmosphere.



- The study has confirmed the phenomenon by mapping the chemical composition of the atmosphere. The study revealed that chlorine levels declined by 0.8% each year between 2005 and 2016 and speculates that it could be the effect of the worldwide ban on the use of CFC. Previous research had hinted at the decrease in the depletion of ozone layer. Scientists believe that the ozone layer would fully recover by 2080.

What is ozone layer?

- A layer of ozone envelops the Earth and keeps damaging ultraviolet, or UV, radiation from reaching living things on the planet's surface. The ozone layer exists mainly in the stratosphere, a layer of the atmosphere that reaches from 10 to 50 kilometers (about 6 to 30 miles) above the Earth's surface.

What is ozone hole?

- The ozone hole is a region of depleted layers of ozone above the Antarctic region, whose creation is linked to increased cases of skin cancer.

Factors responsible for the depletion of ozone:

- Depletion of ozone is due to many factors, the most dominant of which is the release of chlorine from CFCs (Chlorofluorocarbons) which destroys the ozone. CFCs are released by products such as hairsprays, old refrigerators etc.

What are CFCs?

- Chlorofluorocarbons, or CFCs, are compounds made up of combinations of the elements chlorine, fluorine and carbon; aerosols, refrigerants and foams contain CFCs. When these CFCs enter the air, they rise up into the atmosphere to meet up with and destroy ozone molecules. First used in 1928, CFCs have since become more common as various other CFC compounds were created. Some of the better-known CFCs are the Freon compounds, which were used as cooling ingredients in refrigerators and air conditioners. CFCs have lifetimes from 50 to 100 years.

How CFCs destroy the ozone?

- Once in the atmosphere, CFCs drift slowly upward to the stratosphere, where they are broken up by ultraviolet radiation, releasing the chlorine that catalytically destroys ozone. The process is as follows:
- UV radiation breaks off a chlorine atom from a CFC molecule.
- The chlorine atom attacks an ozone molecule (O3), breaking it apart and destroying the ozone.
- The result is an ordinary oxygen molecule (O2) and a chlorine monoxide molecule (ClO).
- The chlorine monoxide molecule (ClO) is attacked by a free oxygen atom releasing the chlorine atom and forming an ordinary oxygen molecule (O2).
- The chlorine atom is now free to attack and destroy another ozone molecule (O3). One chlorine atom can repeat this destructive cycle thousands of times.

Applications of CFCs:

- CFCs have some interesting properties which can be fully exploited;

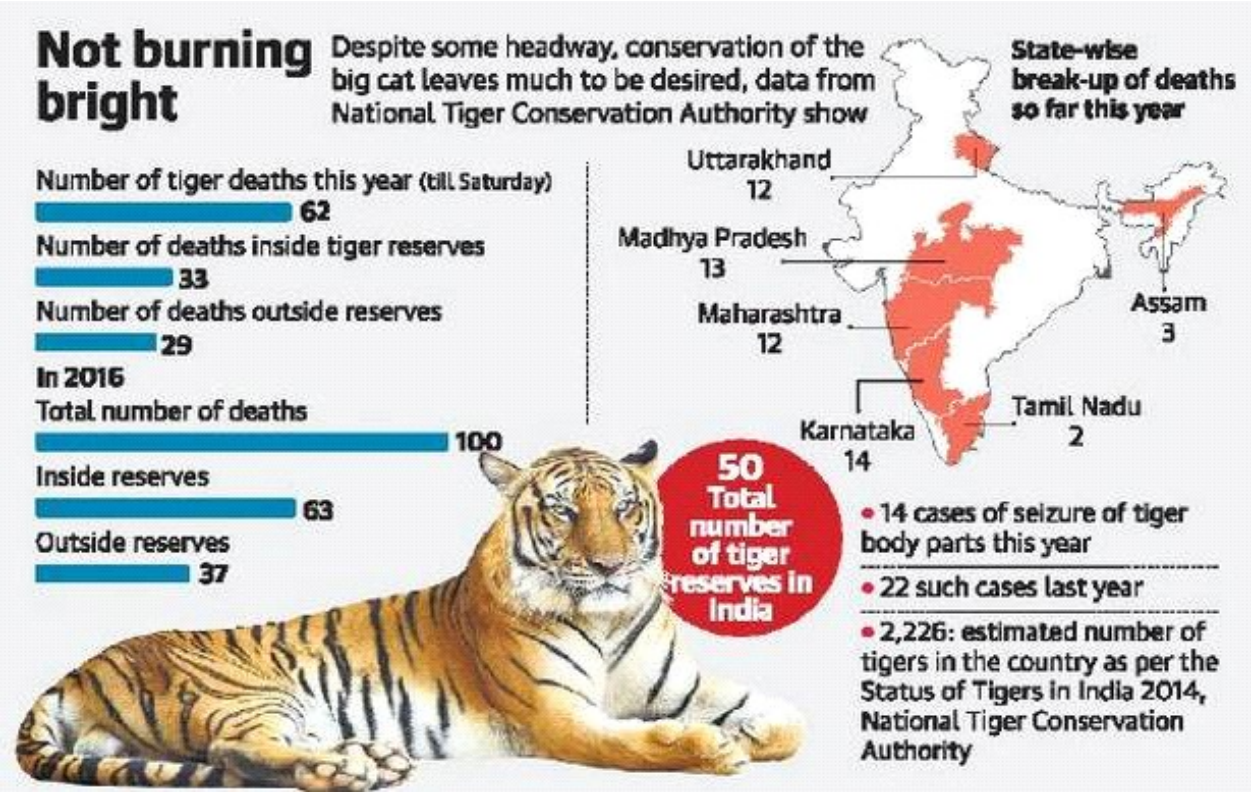
therefore there are plenty of uses for these molecules. CFCs are not flammable; therefore they were used as propellants that would push other molecules out of the aerosol sprays. For the same reason CFCs were used to form foamed plastics. Also low flammability enabled people to use these molecules to dry clean hot electronic components of devices such as air conditioning.

24. National Tiger Conservation Authority (NTCA)

Context:

The National Tiger Conservation Authority (NTCA) has commissioned a report from the Maharashtra Forest Department on how tigress Avni (T1) was killed.

- Maharashtra government had permitted a hunter to kill the tigress-Avni. This move was widely criticised by the activists. The tigress, which is said to have killed 13 people, was shot dead in Yavatmal on November 2 by civilian hunter Asgar Ali, who was with a team of Forest Department officials.



About NTCA:

- The National Tiger Conservation Authority is a statutory body under the Ministry of Environment, Forests and Climate Change constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006, for strengthening tiger conservation, as per powers and functions assigned to it under the said Act.
- The National Tiger Conservation Authority has been fulfilling its mandate within the ambit of the Wildlife (Protection) Act, 1972 for strengthening tiger conservation in the country by retaining an oversight

through advisories/normative guidelines, based on appraisal of tiger status, ongoing conservation initiatives and recommendations of specially constituted Committees.

The functions of NTCA are as follows:

- Ensuring normative standards in tiger reserve management
- Preparation of reserve specific tiger conservation plan
- Laying down annual/ audit report before Parliament
- Instituting State level Steering Committees under the Chairmanship of Chief Minister and establishment of Tiger Conservation Foundation.
- According approval for declaring new Tiger Reserves.

25. Earth's Water A Result Of Asteroid Impacts And Leftover Gas From Sun's Birth

Context:

According to a recent study, 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.

- The study notes 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.

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.
- 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.

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.

26. Bionic mushrooms

Context:

In their latest feat of engineering, researchers at Stevens Institute of Technology have taken an ordinary white button mushroom from a grocery store and made it bionic, supercharging it with 3D-printed clusters of cyanobacteria that generate electricity and swirls of graphene nanoribbons that can collect the current.

- 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:

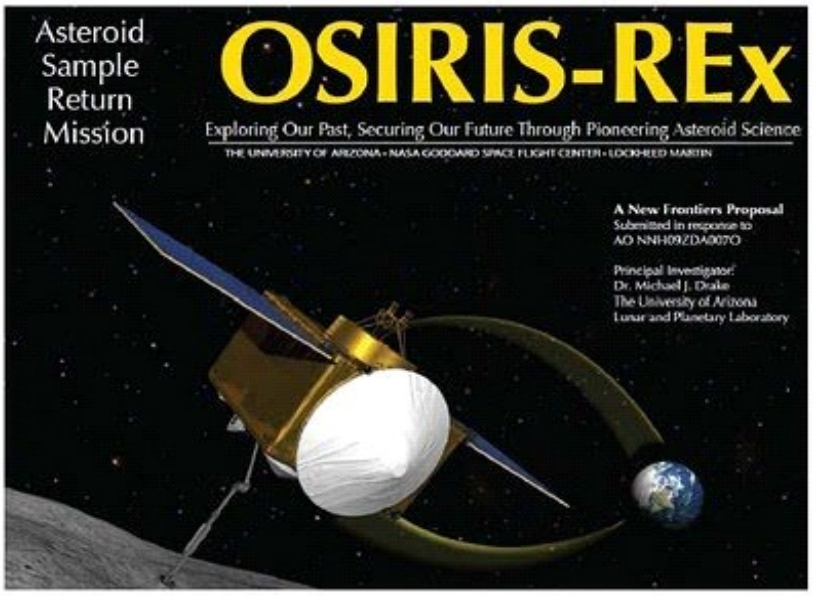
- This bionic mushroom produces electricity. By integrating cyanobacteria that can produce electricity, with nanoscale materials capable of collecting the current, researchers were able to better access the unique properties of both, augment them, and create an entirely new functional bionic system.
- 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.

Science & Technology

27. OSIRIS-Rex

Context:

After two years travelling through space, the NASA OSIRIS-REx spacecraft has started to obtain images of the mission target, primitive asteroid Bennu.



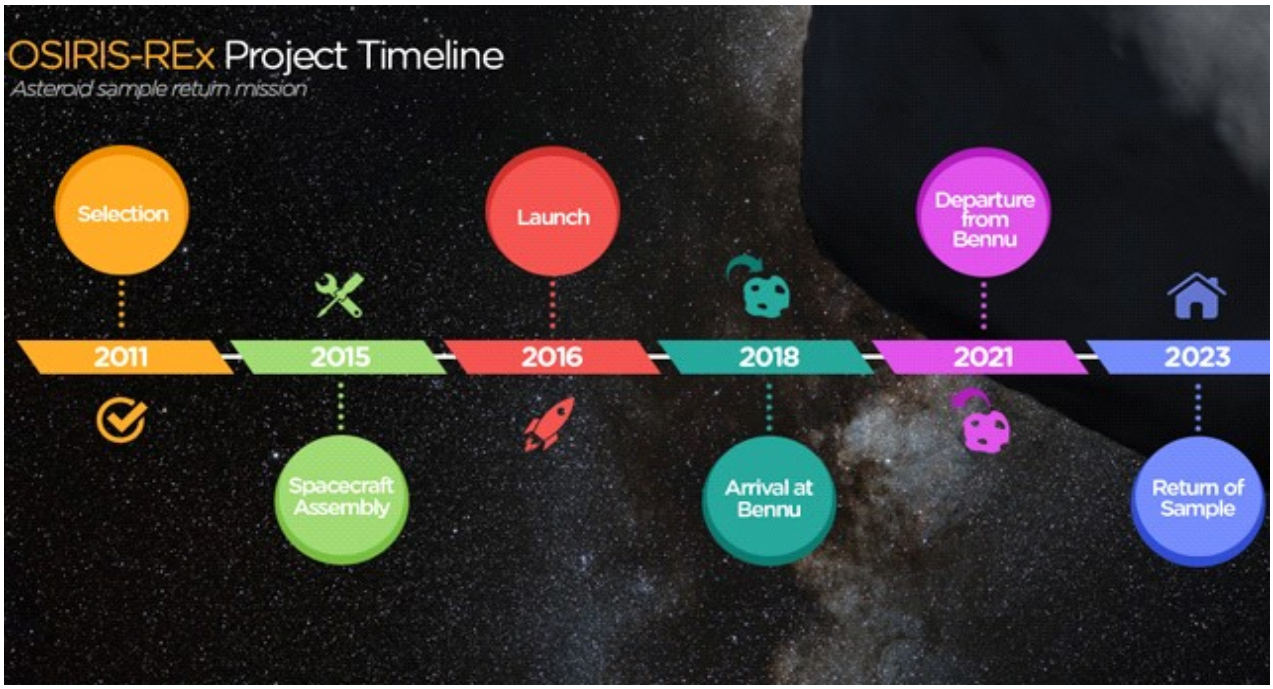
- The launch of the NASA OSIRIS-REx mission took place on September 8, 2016. Since then, the spacecraft has been two years travelling through space to reach its target, primitive asteroid Bennu, in October, 2018.

About the mission:

- OSIRIS-Rex stands for Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer.
- OSIRIS-REx is the third mission in NASA's New Frontiers program, which previously sent the New Horizons spacecraft zooming by Pluto and the Juno spacecraft into orbit around Jupiter.

What will the OSIRIS-Rex do?

- OSIRIS-REx will spend two years travelling towards Bennu, arriving at the asteroid in August 2018. The probe will orbit the asteroid for 3



years, conducting several scientific experiments, before returning to Earth, with the sample capsule expected to land in Utah, USA in September 2023.

- **Scientific Mission Goals:**
  - During its three year orbit of Bennu, OSIRIS-REx will be conducting a range of scientific experiments in order to better understand the asteroid.
  - As part of this, the asteroid will be mapped using instruments on the probe, in order to select a suitable site for samples to be collected from.
  - The aim of the mission is to collect a sample of regolith- the loose, soil-like material which covers the surface of the asteroid.
  - In July 2020, the probe will move to within a few metres of Bennu, extending its robotic arm to touch the asteroid's surface. The arm will make contact with the surface for just 5 seconds, during which a blast of nitrogen gas will be used to stir up the regolith, allowing it to be sucked into the sample collector.
  - OSIRIS-REx has enough nitrogen on board for 3 sample collection attempts, and NASA are hoping to collect between 60 and 2000g of regolith material to bring back to Earth.

Why was Bennu chosen?

- Bennu was selected for a the OSIRIS-REx mission from over 500,000 known asteroids, due to it fitting a number of key criteria. These include:
- **Proximity to Earth:** In order for OSIRIS-REx to reach its destination in a reasonable timeframe, NASA needed to find an asteroid which had a similar orbit to Earth. Around 7000 asteroids are 'Near-Earth Objects' (NEOs), meaning they travel within around ~30million miles of the Earth. Out of these, just under 200 have orbits similar to Earth, with Bennu being one of these.
- **Size:** Small asteroids, those less than 200m in diameter, typically spin much faster than larger asteroids, meaning the regolith material can be ejected into space. Bennu is around 500m in diameter, so rotates slowly enough to ensure that the regolith stays on its surface.
- **Composition:** Bennu is a primitive asteroid, meaning it hasn't significantly changed since the beginning of the Solar System (over 4 billion years ago). It is also very carbon-rich, meaning it may contain organic molecules, which could have been precursors to life on Earth.
- Additionally, Bennu is of interest as it is a Potentially Hazardous Asteroid (PHA). Every 6 years, Bennu's orbit brings it within 200,000 miles of the Earth, which means it has a high probability of impacting Earth in the late 22nd Century.

28. Shakti- India's first indigenous microprocessor

Context:

Indian Institute of Technology Madras (IIT Madras) researchers have designed India's first indigenous microprocessor called 'Shakti'.

About Shakti:

- It is aimed at developing industrial-grade microprocessors and other components of the microprocessor ecosystem.
- It was designed, developed and booted by IIT Madras with microchip fabricated in ISRO's Semi-Conductor Laboratory at Chandigarh.
- It has been developed under project partly funded by Ministry of Electronics and Information Technology (MeitY), as part of two-decade-old efforts to develop indigenous microprocessors.
- The microprocessor will reduce dependency on imported microchips especially in communication and defence sectors and thus eliminate risk of cyber-attacks. It can be used in mobile computing, wireless and networking systems. It may also provide power to mobile phones, smart meters and surveillance cameras.

29. NASA's Ralph and Lucy

Context:

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:

- The Long Range Reconnaissance Imager (L'LORRI).
- The Thermal Emission Spectrometer (L'TES).
- 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.

30. China unveils 'Heavenly Palace' space station

Context:

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.

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.

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 pressurized 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.

Miscellaneous

31. ICGS Varaha

Context:

It is a new Offshore patrol vessel (OPV) launched by the Indian Coast Guard (ICG). It is fourth in the series of 98 M OPVs designed and built indigenously by Larsen & Toubro (L&T).

Key features:

- It is fitted with advanced technology navigation and communication equipment, sensor and machinery. Its weaponry includes one 30 mm and two 12.7 mm guns with fire control system. It has been designed to attain maximum speed of 26 knots and has endurance of 5,000 nautical miles.
- It also equipped with an Integrated Bridge System (IBS), Automated Power Management System (APMS), Integrated Platform Management System (IPMS), and High Power External Fire Fighting (EFF) system.

32. Central Tribal University

Context: Union Cabinet has approved setting up of Central Tribal University. The proposed university will come up in Andhra Pradesh after necessary amendment in the Central Universities Act, 2009.

- **About Central Tribal University:**
  - It will be set up in Relli village of Vizianagaram District of Andhra Pradesh. It will be established under Thirteenth Schedule to Andhra Pradesh Reorganisation Act, 2014.

33. Beyond Fake News Project

Context:

The British Broadcasting Corporation (BBC) has devised a new campaign that is aimed at fighting back against disinformation and fake news. It lays a major focus on global media literacy, including workshops and debates in countries like India.

The most highlighted initiatives under the Project includes:

- In-depth research of Funding
- Sharing online behaviors,
- Rolling out media literacy workshops globally
- BBC Reality Check for upcoming elections

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