Prelim Bits 17-04-2022 & 18-04-2022 | UPSC Daily Current Affairs

Bernardinelli-Bernstein Comet

NASA's Hubble Space Telescope has confirmed that the huge Bernardinelli-Bernstein comet (C/2014 UN271) with an estimated diameter of almost 129 km is indeed the largest icy comet nucleus ever seen by astronomers.

- The Bernardinelli-Berstein comet was discovered by chance in 2010.
- This comet was discovered by astronomers Pedro Bernardinelli and Gary Bernstein in archival images from the Dark Energy Survey at an astronomical observatory in Chile.
- It has been travelling towards the sun for over a million years and it is believed to have originated in the Oort Cloud.
- It follows a 3-million-year-long elliptical orbit.
- It has an estimated temperature of minus 348 degrees Fahrenheit.
- Despite the chilly temperature, it is warm enough to shed carbon monoxide from its surface to produce the dusty coma around its center.
- [Coma is a cloud of dust and gas surrounding the nucleus of a comet.]
- The comet's nucleus is around 50 times larger than that of most known comets, and its mass is estimated to be around 500 trillion tonnes.
- **Measuring the size** - The comet is too far away to be accurately measured by the telescope.
- So, a computer model of the surrounding coma was made and adjusted it to fit the images taken by the Hubble Space Telescope.
- The glow of the coma was then subtracted to reveal the nucleus.

Oort Cloud

- Oort Cloud is a distant region of the solar system that is predicted to be the source of most comets.
- The Oort Cloud is still only a theoretical concept as the comets that constitute it are too faint and distant to be directly observed.
- It was first hypothesised by Dutch astronomer Jan Oort in 1950.

Reference

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State Sponsor of Terrorism

Ukraine's President Volodymyr Zelenskyy has asked the US President Joe Biden to designate Russia

as a "state sponsor of terrorism", which would activate the harshest suite of US sanctions against the Russian government.

- The **US Secretary of State** (minister in charge of foreign relations) has the power to designate countries that have repeatedly provided support for acts of international terrorism as "State Sponsors of Terrorism".
- **Statutes -** There are currently 3 statutes that authorize the US Secretary of State to designate a foreign government for repeatedly providing support for acts of international terrorism:

Statute	**Purpose**
Section 620A of the Foreign Assistance Act, 1961	It prohibits the transfer of most aid.
Section 40 of the Arms Export Control Act (AECA)	It prohibits exports, credits, guarantees, other financial assistance, and export licensing overseen by the State Department.
Section 1754(c) of the Export Controls Act of 2018	It regulates exports.

- Of these three statutes, only the AECA identifies objectionable activities as part of the definition.
- **Sanctions** - The US can place four categories of sanctions on countries that are on this list:
    1. Restrictions on US foreign assistance;
    2. A ban on defence exports and sales;
    3. Certain controls over exports of dual use items; and
    4. Miscellaneous financial and other restrictions.
- Sanctions can also be placed on countries and persons that engage in certain trade with designated countries.
- Among other restrictions, a country's designation as a State Sponsor of Terrorism will make its citizens ineligible for some immigration benefits like automatic revalidation of visas after travel solely to contiguous territory.
- **Countries on the list** - As of now, there are four countries on the list of state sponsors of terrorism.
- They are Syria (1979), Iran (1984), North Korea (2017) and Cuba (2021).
- Countries can be put and taken off the list from time to time.
- A country can be de-listed if it is deemed by the US to have reformed its behavior & returned to complying with the requirements of international law and conduct, or if it has undergone a change of leadership.

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Poison Pill

Twitter has thrown a roadblock in front of Elon Musk's hostile takeover bid by adopting a "poison pill" of "limited-duration shareholder rights plan".

- A poison pill is officially known as a shareholder rights plan, and it can appear in a company's charter or bylaws or exist as a contract among shareholders.
- It is a maneuver that makes a company less palatable to a potential acquirer by making it more expensive and complicated for the acquirer to buy shares of the target company above a certain threshold.
- The whole point of it is to make the offer from the board more attractive than the acquirer.
- The strategy also gives a company more time to evaluate an offer and can give the board leverage in trying to force a direct negotiation with the potential acquirer.
- **Trigger** - There are different types of poison pills, but usually, they allow certain shareholders to buy additional stock at a discounted price.
- The only shareholder blocked from making these discounted purchases is the one who triggers the poison pill.
- It is triggered when a person, usually the acquirer, hits a threshold for how many shares they own.
- If they hit that threshold, the value of their shares is suddenly diluted as other shareholders make discounted purchases.
- Investors rarely try to break through a poison pill threshold, though there are exceptions.
- **Limits** - A company could be limited by the ceiling in its charter on how many shares it is allowed to issue.
- But even if it has hit that ceiling, a company has other options to make the purchase unattractive.
- Poison pills could also be evaded if the acquirer or the shareholders sue the company for violating its fiduciary duties.

Reference

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Parboiled Rice

The Centre will stop the purchase of excess quantity of parboiled rice, of which Telangana is a major producer.

- Parboiling of rice is not a new practice, and has been followed in India since ancient times.
- It refers to partially boiling the rice at the paddy stage, before milling.
- However, there is no specific definition of parboiled rice of the Food Corporation of India or the Food Ministry.
- **Processes** - All processes for parboiling rice generally involve three stages - soaking, steaming and drying.
- After passing through these stages, the paddy goes for milling.
- The more common method is to soak the paddy in hot water for 8 hours. Then the paddy is boiled and sun-dried.
- There are also methods were the paddy is soaked in hot water for 3 hours, steamed for 20 minutes and then dried in the shade.
- The Paddy Processing Research Centre (PPRC), Thanjavur follows a method known as the chromate soaking process.
- It uses chromate, a family of salt in which the anion contains both chromium and oxygen, which removes the odour from the wet rice.

- **Rice variety used -** Generally, all varieties can be processed into parboiled rice, but it is ideal to use long slender varieties to prevent breakage during milling.
- However, aromatic varieties should not be parboiled as the process can make it can lose its aroma.
- **Benefits** - Parboiling makes rice tougher. This reduces the chances of the rice kernel breaking during milling.
- Parboiling also increases the nutrient value of the rice.
- Parboiled rice has a higher resistance to insects and fungi.
- **Disadvantages** - The rice becomes darker and may smell unpleasant due to prolonged soaking.
- Besides, setting up a parboiling rice milling unit requires a higher investment than a raw rice milling unit.

Reference

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Coastal Economic Zones

Under the National Perspective Plan of the Sagarmala Programme, 14 Coastal Economic Zones (CEZ) were envisaged including 3 in the state of Tamil Nadu.

> Ministry of Ports, Shipping and Waterways is exploring the possibility of developing a CEZ, on a pilot basis for enabling Port Led Industrialization and incentivize employment generation, with land available with the Major Ports.

- Coastal Economic Zone (CEZ) refers to designated coastal areas with special economic regulations such as tax incentives and lower tariffs to make it friendly for foreign direct investment.
- It is similar to Special Economic Zone (SEZ) but focuses on coastal development projects such as
    1. Development of port-proximate industrial clusters,
    2. Promoting port-led development,
    3. Reduction of logistics cost and time for movement of goods.
- It consists of a group of coastal districts or districts with strong linkage to ports in the region to utilize the synergies with planned industrial corridor projects.
- CEZ will be developed as part of the plan for developing 14 such industrial clusters to promote manufacturing and generate jobs.
- Port-led industrialization through the CEZ under Sagarmala Programme are expected to provide impetus to the “Make in India” initiative of the Government of India.

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