# Prelim Bits 19-07-2023 | UPSC Daily Current Affairs

## Planet LTT9779 b & Cheops Satellite

*Astronomers have found the most reflective planet ever discovered using data from the European Space Agency's (ESA) Cheops satellite.*

## Planet LTT9779 b

- It is a newly discovered Neptune-like exoplanet that orbits a G-type star.

  *Planets that orbit a star outside the solar system are called as exoplanets.*

- This exoplanet is about the size of Neptune and it is the largest mirror in the universe.
- The metallic clouds are mostly made of *silicate* and other metals like *titanium* mixed into the clouds.
- The blazing-hot exoplanet completes an orbit in *less than a day*.
- The burning planet is very close to its stars and has heavy clouds of metal floating while it rains drops of titanium.
- LTT9779 b can form metallic clouds despite being so hot because the atmosphere is oversaturated with silicate and metal vapours.
- The planet's size and temperature make it what is called an ***ultra-hot neptune.***
- **Uniqueness -** Planets so close to the host star do not have their atmosphere as their atmosphere will be blown away by their star, leaving bare rock.
- The planet has a thick layer of reflective metal clouds, essentially turning it into a gigantic mirror when viewed by observatories.
- The clouds reflect a lot of the starlight, preventing the planet's atmosphere from getting too hot and evaporating.
- It reflects a massive 80% of the light it receives from its host star.
- The metals also mean that the atmosphere is too heavy to be blown away.

*Venus has a thick cloud layer that reflects about 75% of the Sun's light, brightest object in the night sky after the Moon and the Earth reflects around 30% of the incoming sunlight.*

## Cheops Satellite

- **Agency** - Cheops is *European Space Agency's* **Ch**aracterising **Ex****op**lanet **S**atellite.
- **Launch year** - 2019.
- **Orbit** - Sun-synchronous.
- It is the first space mission dedicated to studying bright, nearby stars that are already known to host exoplanets.

- It focuses on planets in the super-Earth to Neptune size range.

**References**

1. The Indian Express | Planet 'that should not exist' is a gigantic mirror

2. ESA | Cheops

## Rudragiri Hillock

*Rudragiri hillock site unveils a fascinating combination of prehistoric rock paintings from the Mesolithic period and exquisite artwork from the Kakatiya dynasty.*

- Rudragiri hillock is located at the Eastern Ghats, in Guntur district of Andhra Pradesh.
- It is named after *King Rudra Deva* of the **Kakatiya dynasty**.
- It features 5 naturally formed rock shelters at its foothills.
- It includes 2 natural caves at the southern end of the hillock
- It exhibits exceptional murals from the renowned Kakatiya kingdom.
- These shelters served as home for people during the Mesolithic age around 5000 B.C., and they bear witness to the *luminous rock paintings* of that era.
- The first cave, starting from the southern end of the hillock, presents a narrative mural portraying the intense battle between the *Vanara brothers*, Vali and Sugriva.
- A Ramayana fresco depicting Hanuman lifting the Sanjeevani hill with his right hand is painted on the Rudragiri hillock.
- In the middle cave, a grand sketch of Hanuman, accompanied by sacred symbols of the conch (Sankha) and the fire altar (Yagna Vedi) is shown.
- The 3$^{rd}$ cave houses the prehistoric rock paintings from the Mesolithic era.
- The Kakatiya artist chose the same rock shelter to superimpose the elegant figure of Hanuman, who is portrayed in a unique 'Anjali' posture, folding his hands in a divine offering.
- There is an evidence that Ramayana scenes depicted at Rudragiri might have drawn inspiration from the artworks at Muppavaram.
- *Ganapati Deva Maharaja (1199-1262 AD)*, the founder of Muppavaram temple and a prominent figure of the Kakatiya dynasty, likely patronised the rich ancient mural heritage found at Rudragiri.

## Other Findings

- There are some unknown ancient remains of Buddhist monasteries and a big rock shelter located on the top of the Rudragiri.
- The badly-ruined brick-built structural remains of an ancient Buddhist Vihara complex were found dating back to the 1st Century CE or 1st Century AD.
- This monastery flourished during the *Satavahana period* and was established by some donors for the Buddhist monks.
- Meditation and practising the principles laid by the Lord Gautama Buddha were the prime activities of the mendicant monks on the hilltop and these constructions are known as *Saila viharas* in contemporary inscriptions.
- The resident monks belonged to the *Chaityakavadin sect* of the Mahasanghika school

of Buddhism, and their chief place of activity was Amaravati (Dharanikota).

## Kakatiya Dynasty (1083-1323 CE)




- **Founder** - Rudradeva I.
- **Capitals** - Anmakonda (Hanumakonda), Orugallu / Ekasilanagara (Warangal).
- **Languages** - Telugu (preferred language), Sanskrit, Kannada.
- **Religion** - Jainism, Hinduism (Saivism).
- **Famous rulers** – Rudradeva, Mahadeva, Ganapatideva I and Rudramadevi.
- **Temples** - Thousand Pillar Temple, Ramappa Temple, Warangal Fort, Golconda Fort and Kota Gullu.

**References**

1. The Hindu | A fascinating fusion of rock art at Rudragiri hillock

2. The Hindu | Remnants of Buddhist monastery

## Crimea Bridge & Kerch Strait

*One of the sections of the rail-and-road Crimea Bridge, which links Russia to the occupied Crimea peninsula, was blown up on recently.*

## Crimea Bridge

- The Crimea Bridge is a crucial structure for Russia as it is the only direct link between the transport network of the country and the Crimean peninsula.
- It is the longest bridge in Europe and is also known as the *Kerch Bridge*.
- It was inaugurated on 2018, 4 years after Russia annexed Crimea.
- *Port of Sevastopol* is the historic home base of Russia's Black Sea Fleet.
- Through this port fuel, food and other products are being supplied.
- Since last year, the bridge has also been an important conduit for reinforcements and supplies to Russian troops who have seized control of territory in southern Ukraine.
- For the Kremlin, the bridge is a symbol of the connection it is attempting to forge

between Crimea and Russia.

## Kerch Strait



- It is a strait in Eastern Europe.
- It connects the Black Sea and the Sea of Azov.
- It separates the Kerch Peninsula of Crimea and Russia.

**References**

1. The Indian Express | Attack on Crimea bridge

2. Britannica | Kerch Strait

## Commission on Genetic Resources for Food and Agriculture (CGRFA)

*The 19th session of the Commission on Genetic Resources for Food and Agriculture (CGRFA) meeting held at Italy recently.*

- **2023 meeting** - The meeting is taking place at the Food and Agriculture Organization's (FAO) headquarters in Rome.
- Delegates and observers will deliberate on 3 matters
  - A review of work on biodiversity, nutrition and human health
  - Access and benefit-sharing for food and agriculture
  - Digital sequence information for food and agriculture

## CGRFA

- It is the only permanent intergovernmental body that deals with all components of biodiversity for food and agriculture.
- The commission was established in 1983 and completed 40 years of existence in 2023.
- **Aim** - To reach international consensus on policies for the sustainable use and conservation of genetic resources for food and agriculture and the fair and equitable sharing of benefits derived from their use.
- **Members** - 179 countries and the European Union.
- India *is a member* of this forum.
- The Commission deals with the diversity of domesticated crops, livestock and farmed fish and aquatic invertebrates, forest trees and aquatic species.
- Its mandate also covers the diversity of all the non-domesticated species that enable production.
- It's one of the landmark achievement is the *International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)*.

## International Treaty on Plant Genetic Resources for Food and Agriculture

- It was adopted by the 31$^{st}$ Session of the Conference of the Food and Agriculture Organization of the United Nations on 2001.
- **Aim**

    - Recognizing the enormous contribution of farmers to the diversity of crops that feed the world
    - Establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials
    - Ensuring that recipients share benefits they derive from the use of these genetic materials with the countries where they have been originated.
- The main provisions of the treaty comprises multilateral system, access and benefit sharing, farmers' rights, sustainable use.

**References**


1. Down to Earth | Genetic resources commission gathers in Rome

2. Down to Earth | Will benefits from genetic resources reach communities?

3. FAO | Commission on Genetic Resources for Food and Agriculture

4. FAO | Treaty on Plant Genetic Resources for Food and Agriculture


## Claude 2

*AI start-up Anthropic unveiling the latest iteration of its AI chatbot Claude- 2*

| Chatbots | Claude 2 | Bard | ChatGPT |
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| **Creator** | Anthropic | Google | OpenAI |
| **Accessibility** | It is free to use for anyone. | It is free to use for anyone. | It is free to use for anyone. |
| **Comparison of documents** | Users can find commonalities between the two documents. | Users can upload images along with prompts, thus making Bard multi-modal. | ChatGPT can compare two documents |
| **Information cutoff date** | Early 2023 | Early 2023 | September 2021 |
| **Token Limit** | Up to 1,00,000 tokens | Up to *2,000* | Up to *8,912*. |
| **Regions** | UK and the US | More than 180 Countries | Most of the countries in the world. |
| **Languages** | - | 40 languages | - |
| **Privacy** | It allow users to delete their conversations and reportedly supports VPN browsing. | It comes with an option to auto-delete interactions in around 18 months. It does not allow users to retrieve past interactions. | ChatGPT allows users to delete their interactions and it does not support VPN access. |

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| **Limitations** | It lacks internet access and is likely to offer incorrect information if prompted with requests for real-world data. | It supports VPN access making it available across the world, bypassing local restrictions.<br>Bard's API access is limited and context handling capabilities are significantly lesser compared to Claude 2. | It has fewer context-handling abilities than Claude 2.<br>It has been reported that while doing complex tasks, ChatGPT can throw up inappropriate results. |

**Reference**

The Indian Express | ChatGPT, Claude 2, or Google Bard?

