

1. Solar Orbiter to map Sun's Poles

Why in News?

- NASA and the European Space Agency (ESA) are gearing up to send a new probe toward the Sun to take a unique look at its blazing poles.

Highlights:

- The Solar Orbiter is due launch to space atop an Atlas 5 rocket from Cape Canaveral, deploying an array of solar panels and antennas before setting off on its 10-year voyage to the Sun.
- It will use the gravitational influence from Earth and Venus to whip itself as close as 26 million miles from the Sun or 95% of the distance between the star and Earth the probe will map the star's poles, which could allow scientists for the first time to observe the concentrated source of solar wind that permeates our solar system.
- Solar wind is soup of charged particles that are highly concentrated at the poles and beam through our solar system, affecting satellites and electronic devices on Earth.
- Solar Orbiter carries ten instruments packed behind a massive 324-pound (147 kg) heat shield, three of which will peer through tiny windows and face the Sun to survey how its surface changes over time.

Layers of Sun:

- **Photosphere:** This is the Sun's deepest layer, and the layer visible to human eyes directly from the Earth. It is also called the solar surface. Much of this layer is covered by granulation caused by the bubbling gas within the convection layer and sunspots caused by strong magnetic fields.
- **Chromosphere:** This layer of the Sun is located between 250 miles and 1300 miles above the photosphere. The chromosphere has temperatures around 4000 degrees Kelvin at the base, and 8000 degrees Kelvin at the top.
- **Corona:** This layer is the Sun's outermost layer. It starts at roughly 1300 miles over the photosphere and it has no upper limit. Its temperature is between 500,000 degrees Kelvin to 1 million degrees Kelvin. The corona cannot be seen with bare eyes.
- **Core:** The core is the Sun's middle region where energy is generated through thermonuclear reactions which creates extreme temperatures of about 15 million degrees Celsius. These nuclear reactions use hydrogen to produce helium.

- **Radiative Zone:** This zone is amidst the core and the convective zones, and it is roughly 70 percent of the Sun's radius. Energy produced through nuclear fusion in the core moves steadily outwards as electromagnetic radiation, taking over 170,000 years to radiate through the radiative zone.
- **Convection Zone:** This layer of the sun is above the radiative zone and it is the outer most layer of the Sun's interior. It stretches from depths of roughly 200,000 kilometres right up to the visible surface.

2. Pre-historic Extinct Elephant Species in Kutch

Why in News?

- Scientists carrying out excavation in Kutch region of Gujarat stumbled upon a premolar tooth, Which belonged to an extinct ancient elephant called Deinotherium Indicum.

Highlights:

- This is the region's first occurrence of the mammal which, hitherto only known from two or three localities of Tapar in Gujarat, Haritalyangar in Himachal Pradesh, and Piram Island off the coast of Gujarat.
- Using a technique called biostratigraphy, it was noted that D. indicum lived roughly between 11 and 7 seven million years ago in India.
- In biostratigraphy, the presence of certain species from a known time period can be used to estimate the age of a deposit containing the same species in a different locality.
- Remains of D. indicum have been found in well-dated Siwalik deposits from Haritalyangar of Himachal Pradesh.
- These species were similar to modern elephant when it comes to their large bodies and limbs but they had flatter skulls, and a set of downwards pointing, curved tusks only on the lower jaw. Analyses of their skulls have shown that they probably also had a short, slightly bulbous trunk.
- This species was a fairly distant relative of today's elephants, both evolutionarily and in time. The deinotheriidae was first found in the fossil record approximately 28 million years old in Africa.
- The team plans to continue their studies in the Tapar beds of Kutch as it may be hiding many more fossils.

- There are also plans to create a dataset of species occurrences through time in western India and compare the trends in diversity seen there with those seen in the well-studied fossil record from the Siwaliks.

3. Agartala - Akhaura Railway Link

Why in News?

- The central government has recently announced a rail line to connect the north-eastern region with Bangladesh will be ready by the end of 2021.

Highlights:

- It links between **Agartala in Tripura and Akhaura in Bangladesh**, which pave the way for the **first** train to run from the north-eastern region to Bangladesh.
- It will connect **Gangasagar in Bangladesh to Nischintapur in India** and **from Nischintapur to Agartala railway station**.
- The cost of laying 5.46 km track will bear by the Ministry for Development of North Eastern Region (DoNER) in Indian side while the cost of laying 10.6 km track will bear by Bangladesh side is being borne by the Ministry of External Affairs.

4. Grand Ethiopian Renaissance Dam

Why in News?

- The **Grand Ethiopian Renaissance Dam (GERD)** is being built by Ethiopia on the river Nile near the Sudan border.

Highlights:

- Egypt is one of the driest countries on earth, with 95% of its people living along the Nile (or its overflowing Delta).
- It relies almost totally on the Nile for its water supply and the construction of this dam will further cut down Egypt's water supply by 12-25%.
- It is the Africa's biggest dam project rising serious concerns about lasting impacts on river-Nile.
- The Nile is already under serious threat of severe pollution, climate change and Egypt's Growing Population.

5. Guru Ravidas

Context:

- Recently, Guru Ravidas Jayanti was celebrated on February 9th. It is celebrated on Magh Purnima, which is the full moon day in the Hindu calendar month of Magha.

About Guru Ravidas:

- He was a saint and reformer of the Bhakti movement in North India.
- He is believed to be a disciple of the bhakti saint-poet **Ramananda** and a contemporary of the bhakti saint-poet **Kabir**.
- His devotional songs made an instant impact on the Bhakti Movement and around 41 of his poems were included in '**Guru Granth Sahib**', the religious text of the Sikhs.

About Guru Ravidas Teachings:

- He spoke against the caste divisions and spoke of removing them to promote unity. He opened a frontal attack against the system of untouchability.
- His moral and intellectual achievements were the conception of "**Begampura**", a city that knows no sorrow; and a society where caste and class have ceased to matter.
- His teachings resonated with the people, leading to a religion being born called the Ravidassia religion, or Ravidassia Dharam based on his teachings.
- He taught about the omnipresence of God and said that a human soul is a particle of God and hence, rejected the idea that people considered lower caste cannot meet God.
- He said, that the only way to meet God was **to free the mind from the Duality**.

6. Narcotics Control Bureau (NCB)

Why in News?

- Recently, the Narcotics Control Bureau (NCB) has arrested the country's first '**darknet**' narcotics operative.

About Darknet:

- It refers to the hidden internet platform used for narcotics sale, exchange of pornographic content and other Illegal Activities.
- It is using the secret alleys of the **onion router** to stay away from the surveillance of law enforcement agencies. It is tough to crack because of its end-to-end Encryption.

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- The cryptocurrencies like Bitcoins and Litecoin were used by the operators to conceal the transactions from Regulatory Agencies.

About Narcotics Control Bureau (NCB):

- It was constituted under the Narcotic Drugs and Psychotropic Substances Act, 1985.
- It is the apex coordinating agency under the Ministry of Home Affairs. The central government is responsible for Drug abuse control.
- It monitors India's frontiers to track down points where smuggling activities take place with foreign traffickers.
- It is based on Article 47 of the Indian Constitution which directs the State to endeavour to bring about prohibition of the consumption, except for medicinal purposes, of intoxicating drugs injurious to health.
- It is part of a global 'Operation Trance', launched in 2019, which is a joint intelligence-gathering action on international postal, express mail and courier shipments containing psychotropic drugs which can only be purchased on a doctor's prescription.
- Psychotropic drug: Any drug capable of affecting the mind, emotions, and behaviour. Some legal drugs, such as lithium for bipolar disorder, are psychotropic.

7. National Commission for The Protection of Child Rights (NCPCR)

Context:

- NCPCR has recently issued a directive to provide counselling for children involved in protests against NRC and CAA. This directive has come under wide criticism from civil societies and Rights Groups.

About NCPCR:

- Under Commissions for Protection of Child Rights Act, 2005 (CPCR), National Commission for Protection of Child Rights (NCPCR) and State Commission for Protection of Child Rights (SCPCRs) have been created as **Statutory bodies** for protection of child rights.
- The Commission's Mandate is to ensure that all Laws, Policies, Programmes, and Administrative Mechanisms are in consonance with the Child Rights perspective as enshrined in the Constitution of India and also the UN.
- The **Child** is defined as a person in the 0 to 18 year's Age Group.

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- The Commission may inquire into complaints and take Suo motu notice of matters relating to:
 - ✓ Deprivation and violation of child rights
 - ✓ Non-implementation of laws providing for protection and development of children
 - ✓ Non-compliance of policy decisions, guidelines or instructions aimed at mitigating hardships to and ensuring welfare of the children and to provide relief to such children
 - ✓ take up the issues arising out of such matters with Appropriate Authorities.

