BF.7, the Omicron sub-variant

❖ Context

➢ The current surge in Covid-19 **infections in China is believed to be driven by the BF.7** sub-variant of Omicron that is circulating in that country.

What Do We Know About BF.7?

- When viruses mutate, they create lineages and **sub-lineages — like the main trunk of the SARS-CoV-2** tree sprouting branches and sub-branches.
- The BF.7 is the same as BA.5.2.1.7, which is a sub-lineage of the **Omicron sub-lineage BA.5**.
- A study published in **'Cell Host and Microbe' journal** earlier reported that the BF.7 sub-variant has a 4.4-fold higher **neutralisation resistance** than the original D614G variant.
- It means **antibodies from a vaccinated or infected individual were less likely to destroy BF.7** than the original Wuhan virus that spread worldwide in 2020.
- A **higher neutralisation resistance means** there is a higher likelihood of the variant spreading in a population and replacing other variants.

Is BF.7 Circulating In India As Well?

- India saw very few cases of BF.7 (offshoot of BA.5).
- As per **data from India's national SARS-CoV-2 genome sequencing network**, BA.5 lineages accounted for only 2.5% of cases in November.
- At present, a recombinant variant XBB is the most common variant in India, accounting for 65.6% of all cases in November.

What Was Different In China?

- Experts believe that it is not the higher transmissibility or immune evasiveness of the BF.7, **rather an immune-naïve population drove the numbers.**
- China is now **experiencing the typical Omicron surge** that other countries have already witnessed.
- Only countries that did not suffer too much were those that remained completely closed until they were able to vaccinate the entire population and then open up — **Australia, New Zealand, and Singapore.**

What is a Viral Mutation?

- Viruses can change, **they alter their genetic make-up.**
- When a virus infects a host cell its goal is to **replicate itself**. The process begins with the copying of genetic material.
- A mutation occurs when there is a **change to the genetic material either the DNA or RNA**.
- The mutation could be entirely novel, or it could have occurred before.
- In SARS-CoV-2 coronavirus variants of concern (VOC) have arisen due to **mutations that have caused changes to the spike protein of the virus**. This is the part of the virus that attaches itself to the host in this case the human cell.

Camel's Number Declining in India

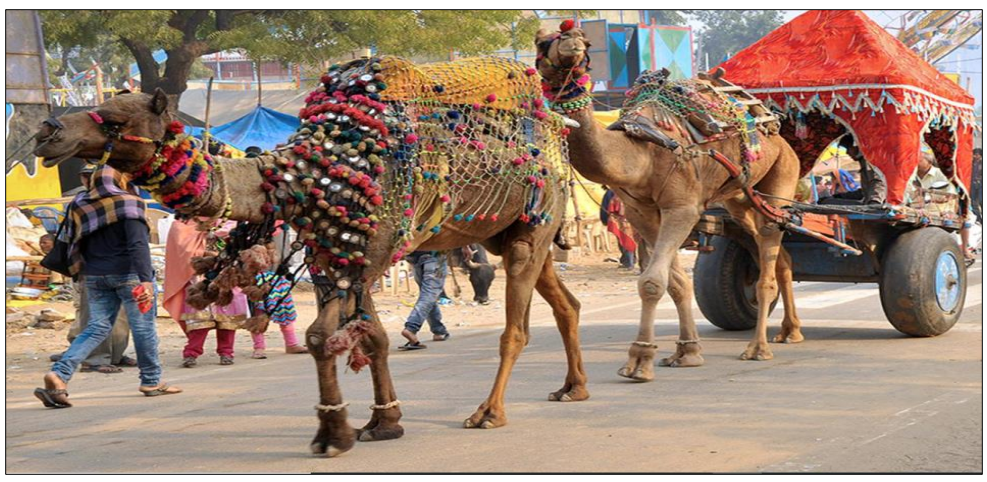
❖ Context

➢ The **number of camels has come down** from 4 lakh during the livestock census of 2012 to 2.52 lakh in the 2019 livestock census, showing a **decline of 37 per cent.**

➢ A **water canal project and better road connectivity** in a State like Rajasthan seem to be the reasons for the decline in the number of camels in the country.

Facts About Camels In India

- Number of camels during **livestock census of 2012- 4 lakh**.
- Number of camels during livestock census of 2192- 2.52 lakh.
- Around **84 per cent of camels** in in India are located in **Rajasthan.**
- Around **11 per cent of camels** in in India are located in **Gujarat**.



Reasons For Decline

- **Fall in grazing lands:**
  - **Rajasthan government** said the grazing lands have declined due to establishment of Indira Gandhi Water Canal project..
  - **The use of camel** in agriculture and transport sectors has also come down in Rajasthan**.**
- **More Vehicles in Use:**
  - Most of the interior areas are connected with 'pakka' roads and **dependency on camels** for transportation from one area to another is reducing gradually.
  - The **younger generation** is moving away from the camel husbandry practice.
  - This is due to their higher educational status and little scope in camel rearing.

Steps Taken:

- Rajasthan government has started **camel conservation scheme of Rajasthan** to promote the production of camel calf.
- Under this scheme, **₹10,000 will be given to camel rearers** in two instalments (for each calf born at the age 0-2 months and 1 year).
- To prohibit camel slaughter 'The Rajasthan Camel Act, 2015' enforced.
- **Gujarat** has established camel **rearing center at Dhori, Kutchh**, is working in a scientific manner to increasing the number of camels through pure breeding.

UNESCO World Heritage Sites

❖ Context

➢ Recently, The **Archaeological Survey of India** said that three new cultural sites in India, including the iconic **Sun Temple at Modhera, the historic Vadnagar town in Gujarat, and the rock-cut relief sculptures of Unakoti in Tripura,** have been added to the tentative list of **UNESCO world heritage sites.**

Key Highlights

- The UNESCO tentative list is an "inventory of those properties which each State Party intends to consider for nomination".
- Though adding a site on the tentative list is a **necessary prerequisite** for any cultural, natural or mixed heritage site to make it to the Unesco World Heritage List.
- "With this, India now has 52 sites on UNESCO Tentative List.
- The list indicates rich cultural and natural wealth of India and shows huge diversity of our heritage.

About The Cultural Sites

- **The Sun Temple, Modhera.**
  - It is **dedicated to Surya Dev.**
  - It is the earliest of such temples which set trends in architectural and decorative details.
  - It represents the Solanki style at its best.
- **Vadnagar**
  - It is a **municipality under Mehsana district of Gujarat**.
  - A multi-layered historic town, the history of Vadnagar stretches back to nearly 8th century BCE.
  - The town still retains a large number of historic buildings that are primarily religious and residential in nature.
- **Unakoti**
  - It is located in the northeastern region of **Tripura**.
  - It is known as an **ancient holy place associated with Shaiva worship.**
  - The site is a massive gallery set in a forested area displaying a number of towering low relief images in a unique style, making it a masterpiece of human creative genius.

World Heritage Sites

- World Heritage Sites are **designated by UNESCO** for having cultural, historical, scientific or other form of significance.
- The sites are judged to contain "cultural and natural heritage around the world considered to be of outstanding value to humanity".
- They have been inscribed on the World Heritage List by the **World Heritage Committee.**
  - The UNESCO World Heritage Committee is composed of **21 UNESCO member states, elected by the General Assembly.**
- UNESCO seeks to protect and preserve such sites through the Convention Concerning the Protection of the World Cultural and Natural Heritage.
- This international treaty was drawn up in 1972.
- As of 2022, there are **40 World Heritage Sites located in India.**
- Out of these, **32 are cultural, 7 are natural,** and **one, the Khangchendzonga National Park, is of mixed type.**
- India has the sixth largest number of sites in the world.

News in Between the Lines

Rohini Nayyar Prize

❖ Context

➢ **Sethrichem Sangtam**, who runs an NGO that works with farmers in eastern Nagaland, has **won the first Rohini Nayyar Prize** for Outstanding Contribution to Rural Development.

❖ Key Highlights

- Sangtam, was presented with **cash prize of Rs 10 lakh**, a citation, and trophy at a ceremony.
- The prize has been instituted in **memory of Rohini Nayyar**, renowned economist who worked with the Planning Commission. She died last year.

- The Nayyar Foundation for Social and Economic Purpose, a foundation set up by her family, will give away **the annual prize to those under 40** for their contribution to rural development**.**
- Sangtam, who runs the **NGO 'Better Life Foundation'**, works with nearly 1,200 farmers in Nagaland.
- It promotes sustainable farming practices and help farmers' transition from slash-and-burn to settled cultivation**.**
- **The NGO also assists farmers** with marketing their products, in addition to promoting three cooperative societies of farmers that help with marketing of produce**.**
- **Sangtam** was selected winner from **among 102 entries**.

Low Cost Heavy Rare Earth-Free High Nd-Fe-B Magnets

❖ **Context**

➢ Scientists have fabricated improved low **cost heavy rare earth-free high Nd-Fe-B** magnets, which are in **high demand for Electric Vehicles** and can make them more affordable.

❖ **Key Highlights:**

- Nd-Fe-B magnet has been **one of the most sought-after permanent magnetic materials** for many applications due to its exceptional combination of magnetic properties.
- Nd-Fe-B magnets used in EVs operate at high temperatures of 150 – 200 C and need to exhibit **high resistance to demagnetization**, a capability that pure Nd-Fe-B magnets do not have.
- Hence **Dysprosium (Dy) metal** is added as an alloy to improve the resistance to demagnetization.
- Recently Advanced Research Centre for Powder Metallurgy & New **Materials (ARCI), have enhanced the coercivity of Niobium (Nb)-containing Nd-Fe-B**.
- **ARCI** has ventured into setting up of **pilot plant for manufacturing of near net shaped Nd-Fe-B magnets** through a major project funded by the Science and Engineering Research Board (SERB) in line with the Atmanirbhar Bharat mission of the Government of India.
- The new strategy could also be used for **commercial production of Nd-Fe-B magnets** in India, **reducing imports** that meet the major requirements of the automotive sector.

"Gaganyaan" Is Targeted To Be Launched In The Fourth Quarter Of 2024.

❖ **Context**

➢ Union Minister today informed that **India's maiden human space flight 'H1' mission** is targeted **to be launched in the fourth quarter of 2024**.

❖ **Key Highlights**

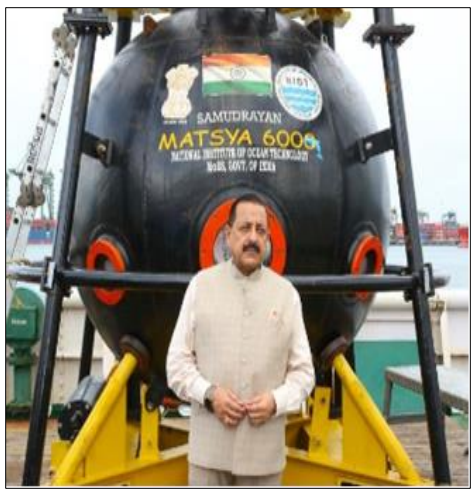
- **Two Test Vehicle missions** are planned before the 'G1' mission to demonstrate the performance of crew escape system and parachute-based deceleration system for different flight conditions.
- The **uncrewed 'G1' mission** is targeted to be launched in the last quarter of **2023**.
- It is followed by the **second uncrewed 'G2' mission** in the second quarter of **2024**.
- And final **human space flight 'H1'** mission in the fourth quarter of **2024.**
- First uncrewed flight of Gaganyaan programme i.e., '**G1' mission is aimed at**-
  - **Validating** the performance of Human rated launch vehicle.
  - Orbital module propulsion system, mission management, communication system and recovery operations.
  - **The mission will carry a humanoid as payload**.
- The **astronaut designates** for human space flight mission are identified and are currently undergoing their mission specific **training at Bengaluru**.

Samudrayaan Mission

❖ **Context**

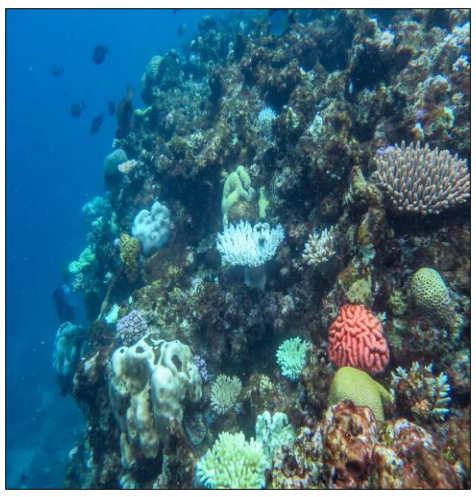
➢ Union Minister of State (Independent Charge) Science & Technology informed that the **Samudrayaan Mission is expected to be realised by year 2026**.

❖ **Key Highlights**



- Samudrayaan mission is **aimed** at sending three personnel to 6000-metre depth in a vehicle called '**MATSYA 6000'**.
- It will help in exploration **of deep sea** resources like minerals etc.
- **MATSYA 6000'** vehicle is being designed and developed by National Institute of Ocean Technology **(NIOT), Chennai** under Ministry of Earth Sciences.
- It has an **endurance of 12 hours** under normal operation and 96 hours in case of emergency for human safety.
- The **Manned Submersible facilitates** the direct **observation by the human** in deep ocean in exploring mineral resources rich in Nickel, Cobalt, Rare Earths, Manganese etc. and collection of samples, which can be used for analysis.
- Apart from the scientific research and technological empowerment as the benefits, this mission has immediate derivatives in the form of **underwater engineering innovations** in **asset inspection, tourism and promotion of ocean literacy.**
- The mission also consists development of 6000 m depth rated **Integrated Mining Machine and unmanned vehicles** (tethered and automated) to explore deep sea resources and biodiversity assessment.

Freezing Great Barrier Reef Coral



❖ Context

➢ Scientists working on **Australia's Great Barrier Reef** have successfully trialled a **new method for freezing and storing coral larvae** they say could eventually help rewild reefs threatened by climate change.

❖ Key Highlights

- Scientists are scrambling to protect coral reefs as **rising ocean temperatures destabilise delicate ecosystems.**
- The Great Barrier Reef has **suffered four bleaching events** in the last seven years including the first ever bleach during a La Nina phenomenon, which typically brings cooler temperatures.

❖ Cryomesh

- Cryomesh is a specially fabricated mesh used as substrate in cryopreservation.
- This is lightweight and can be manufactured cheaply.
- It **better preserves coral and has the properties of cryoplates.**
- The mesh technology will help store coral larvae at -196°C (-320.8°F).

❖ Great Barrier Reef

- The GBF is the **world's largest coral reef system** composed of over **2,900 individual reefs** and 900 islands stretching for over 2,300 kilometers.
- The reef is **located in the Coral Sea**, off the coast of Queensland, Australia.
- It was **world heritage listed in 1981 by UNESCO** as the most extensive and spectacular coral reef ecosystem on the planet.
- Since 1985, the Great Barrier Reef has **lost more than two-thirds of its corals.**

Great Lakes

❖ Context

➢ Recently, it has been observed that by 2100, the **Great Lakes — Superior, Michigan, Huron, Erie, and Ontario — might** approach acidity at around the same rate as the oceans.

❖ Great Lakes

- The Great Lakes are **five interconnected bodies of water** straddling the US-Canada border.
- They **drain into the Gulf of St Lawrence** in the North Atlantic through the St Lawrence River.
- They are the largest group of freshwater lakes in the world.
- The US-Canada border passes through Lakes Superior, Huron, Erie, and Ontario.
- **Lake Michigan lies entirely in the US.**
- Lakes Michigan and Huron are sometimes considered as a single water body.
  - Taken together, they are the world's largest freshwater lake by surface area.
- By itself, Lake Huron is the world's third largest freshwater lake, after Lake Superior and Lake Victoria.

❖ Acidification of Water Bodies

- Acidification of oceans or freshwater bodies takes place **when excess carbon dioxide in the atmosphere gets rapidly absorbed into them.**
- Absorption of carbon dioxide leads to a **lowering of the pH,** which makes the water bodies more acidic.
- Acidification may lead to a **decrease in native biodiversity**, create physiological challenges for organisms, and **permanently alter the structure of the ecosystem.**

AYURSWASTHYA Yojana

❖ **Context**

- Currently, the Ministry of Ayush is running a Central Sector Scheme namely, AYURSWASTHYA Yojna.

❖ **Key Highlights**

- It has been started from the Financial Year 2021-22 by merging two erstwhile schemes of this Ministry.
- **Nodal Ministry**- Ministry of Ayush.
- **Scheme Type**- Central Sector Scheme.
- **AYURSWASTHYA Yojana has two components.**
  - **AYUSH and Public Health (PHI)**
    - Under this, AYUSH interventions are rolled out for common public health issues related to communicable diseases, non-communicable diseases, MCH, Geriatric care, mental health etc.
  - **Centre of Excellence (CoE)**
    - Under this, financial assistance is provided to eligible individual organizations/institutes for establishing and upgrading their functions & facilities and/or for research & development activities in AYUSH.
- The maximum admissible financial assistance under the Centre of Excellence component of AYURSWASTHYA Yojana, to an organization/institute is Rs.10.00 crores for a maximum period of three years.

Global Minimum Tax

❖ **Context**

- Recently, Members of the European Union agreed in principle to implement a minimum tax of 15% on big businesses.

❖ **Global Minimum Tax**

- EU members have agreed to implement the **tax on big businesses in accordance with Pillar 2 of the global tax agreement framed by the OECD last year.**
- Under the OECD's plan, **governments will be equipped to impose additional taxes** in case companies are found to be paying taxes that are considered too low.
- This is to ensure that big businesses with global operations do not benefit by domiciling themselves in tax havens in order to save on taxes.
- **Pillar 1** of the OECD's tax plan tries to address the question of taxing rights.
  - Large multinational companies have traditionally paid taxes in their home countries even though they did most of their business in foreign countries.
  - The OECD plan tries to give more taxing rights to the governments of countries where large businesses conduct a substantial amount of their business.
  - As a result, large U.S. tech companies may have to pay more taxes to governments of developing countries.
- It is estimated that the minimum tax rate would boost global tax revenues by $150 billion annually.

Daily Current Affairs Daily Pre PARE Daily MCQ Quiz