Assisted Reproductive Technology (ART)

❖ Context

➢ The Indian government has introduced stricter regulations for **Assisted Reproductive Technology (ART)** to curb the money-making industry that carries out unnecessary procedures.

❖ What is Assisted Reproductive Technology?

- Assisted Reproductive Technology (ART) refers to medical procedures or techniques that are used to help couples who are unable to conceive a child on their own.
- ART involves the **manipulation of sperm and eggs,** or embryos, in a laboratory setting to establish a pregnancy.
- The most common ART procedure is in vitro fertilization (IVF), which involves combining eggs and sperm outside the body in a laboratory dish and then transferring the resulting embryo(s) into the woman's uterus.
- Other ART procedures include **intracytoplasmic sperm injection (ICSI),** where a single sperm is injected directly into an egg, and **gamete intrafallopian transfer (GIFT),** where the sperm and eggs are placed directly into the woman's fallopian tubes.
- ART can be used in cases of male or **female infertility, genetic disorders, or other fertility issues.**
- ART can also involve the use of **donor eggs or sperm, surrogacy, or pre-implantation genetic testing (PGT)** to screen embryos for certain genetic conditions before transfer.

❖ What regulations have been brought in?

- The government has limited the number of **oocytes** that can be retrieved in one cycle to prevent **ovarian hyperstimulation.**
- The number of embryos that can be transferred to the female during the treatment cycle is capped at **1-2,** except in exceptional circumstances.
- The move aims to prevent **multiple births** and decrease morbidity in newborns, reducing the pressure on the healthcare system.
- Clinics shall retrieve oocytes from the donor after taking **their consent** and must make efforts to retrieve not more than **seven oocytes during one cycle.**
- The regulations mention that there must be health insurance for the donor.
- One donor should **not be repeated**, and they must give their consent for the same.

❖ Significance of These Regulations:

- The regulations will ensure the safety of patients **undergoing ART treatments.**
- The move will help put an end **to unnecessary procedures undertaken** by clinics to make money.
- Many IVF clinics in India operate **with semi-trained staff**, putting patients' lives at risk. Regulations are required to regulate the industry.

Mission 50K-EV4ECO

❖ Context

➢ Recently, Small Industries Development Bank of India (SIDBI) announced a new scheme to boost the electric vehicle (EV) ecosystem in the country.

❖ Key Highlights

- **Background :**
  - Financial institutions, in general, are wary of investing in SMEs in the EV sector.
  - This is because the nascent sector is perceived to have high asset and operations risks.
- Mission 50K-EV4ECO intends to **'promote the entire EV value chain'.**
- The pilot phase of the scheme focuses on increasing the uptake of electric two-wheelers, three-wheelers and four-wheelers through direct and indirect lending support to vehicle aggregators, fleet operators and leasing companies.
- Under Mission 50K-EV4ECO, **SIDBI will directly provide loans to eligible small and medium enterprises (SME)** for the purchase of EVs and developing charging infrastructure, including battery swapping.
- SIDBI's scheme is a positive step to support the demand-side of EV adoption in India, especially in light of the Government of India's FAME 2 scheme coming to an end by March 2024.

❖ About SIDBI :

- Small Industries Development Bank of India (SIDBI) was established under an Act of the Parliament in **1990**.
- SIDBI is the Principal Financial Institution engaged in promotion, financing & development of the Micro, Small and Medium Enterprises (MSMEs) sector and coordination of the functions of the various institutions engaged in similar activities.
- It is a wholly-owned **subsidiary of IDBI (Industrial Development Bank of India).**

National Quantum Mission (NQM)

❖ Context

➢ Recently, the Union Cabinet approved the ₹6,003 crore **National Quantum Mission (NQM)** that will fund research and development of quantum computing technology & associated applications.

❖ About NQM

- **Nodal Ministry**- Department of Science & Technology (DST) under the Ministry of Science & Technology.
- **Duration**- 2023-2031
- **Cost**- the mission was budgeted for ₹8,000 crore in the Union Budget of 2023.
- **Features :**
  - The plan involves developing **"intermediate scale"** quantum computers with
    - 20-50 physical 'qubits' in three years,
    - 50-100 physical qubits in five years,
    - 50-1,000 physical qubits in eight years.
  - Just like bits (1 and 0) are the basic units by which computers process information, **'qubits' or 'quantum bits' are the units of process by quantum computers.**
  - Other ambitions include developing **satellite based secure quantum communications-**
    - between ground stations over a range of 2,000 kilometres within India,
    - long distance secure quantum communications with other countries,
    - inter-city quantum key distribution over 2000 km as well as multi-node quantum network with quantum memories are also some of the deliverables of the mission.
  - The mission will **help develop magnetometers** with high sensitivity in atomic systems, atomic clocks for precision timing, communications and navigation.
- **Fabrication of quantum materials** such as superconductors, novel semiconductor structures, and topological materials for fabrication of quantum devices.
- **Four Thematic Hubs (T-Hubs**) would be set up in top academic and National R&D institutes on the domains of : (1) Quantum Computing, (2) Quantum Communication, (3) Quantum Sensing & Metrology and (4) Quantum Materials & Devices.
- **Significance :** Only six countries so far have some capability in this domain. Presently, R&D works in quantum technologies are underway in the US, Canada, France, Finland, China, and Austria.
  - This mission will bring India to the forefront along with them, and India can be a world leader.
  - The mission's purpose is to **nurture and strengthen scientific and industrial research and development of quantum technology.**
  - It will have wide-ranging applications from **health care and diagnostics to defense and energy.**

❖ Quantum Technology

- Quantum technology is a class of technology that works by **using the principles of quantum mechanics** (the physics of sub-atomic particles), including quantum entanglement and quantum superposition.
- Classical computers today employ a stream of electrical impulses (1 and 0) in a binary manner to encode information in bits.
- This restricts their processing ability compared to quantum computing.
- **Quantum computing uses subatomic particles,** such as electrons or photons.
- Quantum bits, or qubits, allow these particles to exist in more than one state (i.e., 1 and 0) at the same time.
- Qubits can exploit the interference between their wave-like quantum states to perform calculations that might otherwise take millions of years.

Hakki Pikki

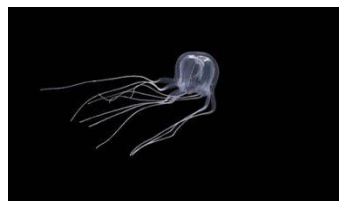
❖ Context

➢ Recently, more than 181 members of the **Hakki Pikki tribal community** from Karnataka are stuck in violence-hit Sudan.

❖ About Hakki Pikki

- The Hakki Pikki is a tribe that lives in **several states in west and south India, especially near forest areas.**
- Hakki Pikkis (Hakki in Kannada means 'bird' and Pikki means 'catchers') are a **semi-nomadic tribe**, traditionally of **bird catchers and hunters.**
- According to the **2011 census**, the Hakki Pikki population in Karnataka is **11,892,** and they live majorly in Davangere, Mysuru, Kolar, Hassan and Shivmogga districts.
- In different regions, they are known by different names, such as **Mel-Shikari in northern Karnataka and Maharashtra.**
- The Hakki Pikki move in groups from place to place in search of livelihood.
- They are **divided into four clans,** called Gujaratia, Panwar, Kaliwala and Mewaras. These clans can be equated with castes in the traditional Hindu society.
- In the olden days, there was a hierarchy among the clans, with the **Gujaratia at the top and the Mewaras at the bottom.**
- The forest is the main natural resource of the Hakki Pikki.
- They have **traditional medical knowledge** that is in demand in several African countries.

Tripedalia Maipoensis



❖ **Context**

➢ Scientists from Hong Kong Baptist University (HKBU) discovered a new species of box jellyfish in Mai Po Nature Reserve.

❖ **Unique Features of Box Jellyfish:**

- Box jellyfish are a small group, with only 49 species reported worldwide.
- Most species of box jellyfish have a transparent, **colorless body** and three tentacles at each of their four corners.
- Box jellyfish can swim faster than other jellyfish due to the flat pedal-shaped structure at the base of each tentacle that looks like a boat paddle.
- This allows them to produce strong **thrusts when** contracting their bodies.

❖ **Mai Po Nature Reserve:**

- Mai Po Nature Reserve is located in northern Hong Kong.
- The reserve covers an area of approximately 380 hectares and is an important wetland habitat for migratory birds other wildlife.

- It is also one of the few remaining mangrove swamps in Hong Kong.
- It has been designated as a **Ramsar Site,** which is an international treaty for the conservation and sustainable use of wetlands.
- The reserve is home to over **380 species of birds,** including 35 globally threatened species, as well as a variety of other wildlife such as fish, crabs, and mammals.

News in Between the Lines

Ningaloo Eclipse

❖ **Context**

➢ The remarkably rare “hybrid” annular-total solar eclipse was viewed in different parts of the world recently.

❖ **What is a hybrid solar eclipse?**

- A hybrid solar eclipse is a rare type of eclipse that occurs only a few times per century.
- As per NASA, hybrid eclipses shift from annular to total due to **our planet's curve.**

❖ **How it is different from a total eclipse?**

- A total eclipse occurs when the moon **completely obscures the sun,** whereas an annular eclipse occurs when the moon obscures the sun but appears smaller, leaving the outline of a **solar ring and the rare hybrid eclipse takes place** when both occur at the same time.

National Civil Services Day

❖ **Context**

➢ The National Civil Service Day is annually observed in India on **April 21 to honour the contribution of civil servants to society.**

❖ **Key Highlights:**

- It was on this day in 1947 the 'Iron Man of India'- Sardar Vallabhbhai Patel referred to the civil servants as the **'steel frame of India'** who are the executors of the policies of the government of the day - a pillar on which the wheel of governance that churns policies and programs for the country.
- In India, the civil services consists of **Indian Administrative Service (IAS), Indian Police Service (IPS), Indian Foreign Service (IFS),** and a comprehensive list of All India Services and Central Services Group A and Group B.
- The first Civil Services Day function was held in Vigyan Bhawan on April 21, 2006.
- **This year theme:** "Viksit Bharat' - Empowering citizens and reaching the last mile."

Indian Skimmer

❖ **Context**

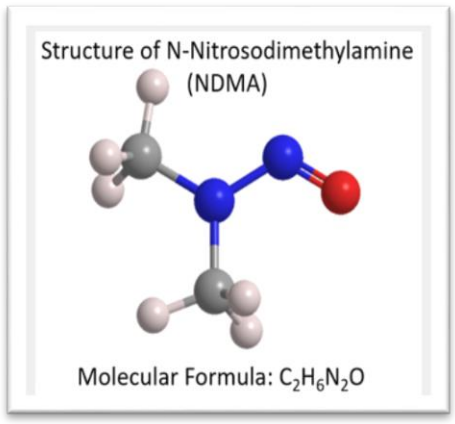
➢ Recently, in Satkosia wildlife sanctuary, breeding of Indian Skimmers has been recorded for the first time.

❖ **About Indian Skimmer**

- The Indian skimmer or Indian scissors-bill **(Rynchops albicollis)** is **one of the three species** that belong to the skimmer genus Rynchops in the family Laridae.

- **Characteristics :**
  - They are very brightly marked in black, white and orange, making them difficult to miss.
- **Distribution and Habitat :**
  - It is found on large rivers and lakes, swamps and coastal wetlands such as estuaries.
  - It is most common in freshwater, particularly during the breeding season.
  - In India, the **species can be sighted near the Chambal rive**r in Central India, in a few parts of Odisha and in Andhra Pradesh.
- **Conservation Status :**
  - **IUCN Red List- Endangered.**
  - In 2020, **Bombay Natural History Society (BNHS)** has initiated a **'Guardians of the Skimmer'** programme, which a community-based conservation initiative.

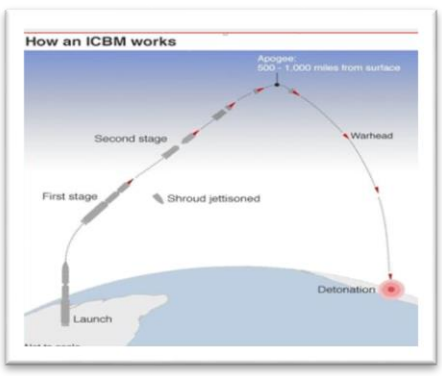
NDMA
N-NITROSODIMETHYLAMINE



❖ Context
- ➢ Recently, the Gujarat High Court issued a notice to the **Drug Controller General of India (DCGI)** and the **Gujarat Food and Drugs Control Administration (FDCA),** in a public interest litigation (PIL) seeking immediate removal of drugs and medicines containing "cancerous impurities" such as NDMA from the Indian market.

❖ Key Highlights
- N-nitrosodimethylamine, or NDMA, is a **yellow, odorless liquid chemical once used to make rocket fuel.**
- It is also a **byproduct of several manufacturing processes and water chlorination.**
- NDMA is also created when the food or drink is processed. Foods such as cured meats (particularly bacon), beer, fish, cheese and even vegetables may contain NDMA.
- Small amounts of **NDMA may occur in water, soil and air.**
- It's been classified as a probable human carcinogen.
- **NDMA overexposure can cause side effects including:**
- Headache, Fever, Nausea, Jaundice, Vomiting, Abdominal cramps, Enlarged liver, Dizziness, Reduced liver, kidney and lung function.

M51 Ballistic Missile



❖ Context
- ➢ French submarine Le Terrible has successfully launched an **M51 ballistic missile.**

❖ Key Highlights:
- The M51 rocket was developed by the Ariane Group, a subsidiary of Airbus and Safran.
- It has a **height of 12 meters and a diameter of 2.3 meters.**
- The missile is capable of carrying 6-10 **Tête nucléaire océanique (TNO)** nuclear warheads.
- The fusion charge has a yield of **100 kilotons** TNT equivalent.
- It has a maximum launch range of **10,000 km.**
- It is rumoured that the missile can reach a speed of Mach 26 (over 30,000 km/h) in flight.

❖ Ballistic Missiles:
- Ballistic missiles are missiles that are launched into the atmosphere and follow a ballistic trajectory, meaning they are propelled by an initial force and then follow a path determined by gravity and atmospheric drag until they reach their target.
- These missiles can be armed with conventional or nuclear warheads and are capable of delivering these payloads over long distances.
- There are two main types of ballistic missiles:
  - **Intercontinental ballistic missiles (ICBMs):** ICBMs are designed to travel thousands of kilometers and are typically used as part of a country's strategic nuclear arsenal.
  - **Shorter-range ballistic missiles (SRBMs):** They have a shorter range and are typically used for tactical purposes, such as attacking enemy military targets or delivering conventional payloads.

MCQ Quiz
Daily Current Affairs
Daily Pre PARE Daily