Agni-Prime Missile

The new generation ballistic missile Agni-Prime was successfully flight-tested by the Strategic Forces Command (SFC) along with the Defence Research and Development Organisation (DRDO) from the Dr APJ Abdul Kalam Island off the coast of Odisha.

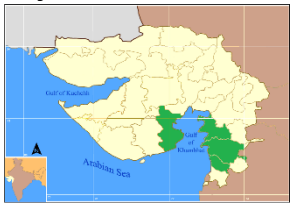
About Agni-Prime Missile:

- It is a **nuclear-capable** new-generation advanced variant of the Agni class of missiles. It is a **two-stage canisterised** missile with a maximum **range of 1,000 to 2,000 km.**
- It is lighter than all the earlier Agni series of missiles. It weighs at least 50 per cent less than the Agni 3 missile and has new guidance and propulsion systems.
- It can be **transported by road and rail** and stored for longer periods, significantly reducing the time required for preparation and launch. The missile uses a **cold launch mechanism** and can be fired in salvo mode.

What are Ballistic Missiles?

- These are launched directly into the **upper layers of the earth's atmosphere**. They can travel outside the atmosphere, where the warhead detaches from the missile and falls towards a predetermined target.
- They are rocket-propelled self-guided weapons systems which can carry conventional or nuclear munitions. They can be launched from **aircraft, ships and submarines and land.**

Key Facts about Gulf of Khambhat



The Indian Coast Guard (ICG) recently evacuated a fisherman from a fishing boat 50 kilometres away from the coast in the Gulf of Khambat.

About Gulf of Khambhat:

- The Gulf of Khambhat (also known as the Gulf of Cambay) is an inlet of the **Arabian Sea** along the west coast of India, in the state of Gujarat. It **divides the Kathiawar Peninsula from** the **south-eastern** part of **Gujarat**.

Geography:

  - The periphery of the Gulf of Khambhat is an extensive area of **estuarine habitats**.
  - The **Narmada, Tapti, Mahi and Sabarmati** rivers drain into it.
  - These rivers have **deposited alluvium** over large areas as the marine recession has united Saurashtra with the mainland of Gujarat.
  - The Gulf is not very deep and has abundant **shoals and sandbanks.**
  - There are extensive areas of **intertidal mud** and **sand flats** in the deltas of the Mahi and Sabarmati rivers.
  - There are some **coral reefs** around small inlets in the western part of the Gulf.
- Its shape and its orientation in relation to the southwest monsoon winds account for its high tidal range (12 metres) and the high velocity of the entering tides.
- On the eastern side of the gulf are **Bharuch, one of the oldest Indian ports**, **and Surat,** identified with early European commercial contacts with India.
- The **town of Khambhat** is at the head of the gulf.

What are Shallowfakes?

With the Lok Sabha elections scheduled, social media platforms are abuzz with misinformation, mostly in the form of shallow fakes.

About Shallowfakes:

- Like deepfake, shallowfake is also an act

of **morphing people's pictures** and using them for malicious activities. But unlike deepfake, which is created by using advanced artificial intelligence (AI) software, shallowfake can be **created by simply** using **basic editing software.**

- They are **made with existing technologies**—for example, a conventional edit on a photo, slowing-down a video to change the speech patterns of an individual or more often, relying on mis-captioning or mis-contextualising an existing image or video, claiming it is from a time or place which it is not from.
- And precisely because of this easier way to create them, many experts consider shallowfakes to be **bigger threats than deepfakes.**
- **Why are they called shallow?** The term 'shallow' implies the quality of such fakes, which are lower in quality compared to deepfakes.
- They are **used to create a false proof of identity** or address, including photo ID documents like passports, driving licences etc.
- It is also used to **create fake supporting evidence** to support a claim or transaction, like contracts, agreements and invoices for services, no claims discount certificates, etc.

What are Deepfakes?

- Deepfakes are a **compilation of artificial images and audio** put together **with machine-learning algorithms** to spread misinformation and replace a real person's appearance, voice, or both with similar artificial likenesses or voices. The term "deepfake" combines the deep learning concept with something fake.
- It can **create people who do not exist** and it can fake real people saying and doing things they did not say or do.

Working:

- They are created by **machine learning models**, which use neural networks to manipulate images and videos.
- To make a deepfake video of someone, a creator would first train a neural network on many hours of real video footage of the person to give it a realistic

"understanding" of what he or she looks like from many angles and under different lighting.

- Then they'd combine the trained network with computer-graphics techniques to superimpose a copy of the person onto a different actor.

- Deep fakes differ from other forms of false information by being **very difficult to identify as false.**

What are Microplastics?

Researchers recently created a plant-based polymer that biodegrades at microplastic level.

About Microplastics:

- Microplastics are **tiny plastic particles** that result from both commercial product development and the breakdown of larger plastics. Officially, they are defined as **plastics less than five millimeters** (0.2 inches) in diameter.
  - The name is used to differentiate them from "macroplastics", such as bottles and bags made of plastic.
- They are **present in a variety of products**, from cosmetics to synthetic clothing to plastic bags and bottles. Many of these products readily enter the environment as waste.
- They **consist of carbon and hydrogen atoms** bound together **in polymer chains. Other chemicals**, such as phthalates, polybrominated diphenyl ethers (PBDEs), and tetrabromobisphenol A (TBBPA), are typically also present in microplastics.
- There are two categories of microplastics: primary and secondary.
  - **Primary microplastics** are tiny particles designed for commercial use, such as cosmetics, as well as microfibers shed from clothing and other textiles, such as fishing nets.
  - **Secondary microplastics** are particles that result from the breakdown of larger plastic items, such as water bottles. This breakdown is caused by exposure to environmental factors, mainly the sun's radiation and ocean waves.

- **Environmental Impacts:**
  - The problem with microplastics is that, like plastic items of any size, they do **not readily break down** into harmless molecules.
  - Thus, **once in the environment**, primary and secondary microplastics **accumulate and persist.**
  - Microplastics **in the ocean can bind with other harmful chemicals** before being ingested by marine organisms. Standard water treatment facilities cannot remove all traces of microplastics.
  - Microplastics are also a **source of air pollution**, occurring in dust and airborne fibrous particles.

What are Polymers?

- Polymers are **materials made of long**, **repeating chains of molecules**. The materials have unique properties, depending on the type of molecules being bonded and how they are bonded.
- **Some polymers bend and stretch**, like rubber and polyester. **Others are hard and tough,** like epoxies and glass.
- The term polymer is often used to describe plastics, which are **synthetic polymers.** However, **natural polymers** also exist; rubber and wood, for example, are natural polymers that consist of a simple hydrocarbon, isoprene.

What is the National Medical Commission (NMC)?

The Supreme Court recently issued a clear directive to the National Medical Commission (NMC) to submit details regarding the stipend status of medical colleges across all States.

About National Medical Commission (NMC):

- It has been constituted by the **National Medical Commission Act, 2019,** which came into force on September 25, 2020.

- It **replaced** the erstwhile **Medical Council of India (MCI).** It regulates medical education and medical professionals in the country.
- It grants recognition of medical qualifications, gives **accreditation to medical schools**, grants **registration to medical practitioners**, monitors medical practice, and assesses the medical infrastructure in India.

Headquarters: New Delhi

Functions:

- **lay down policies** for maintaining high quality and high standards in medical education and make necessary regulations on this behalf;
- lay down policies for **regulating medical institutions**, **medical researches** and **medical professionals** and make necessary regulations in this behalf;
- **assess the requirements in healthcare**, including human resources for health and healthcare infrastructure
- take such measures, as may be necessary, to ensure compliance by the **State Medical Councils** of the guidelines framed
- exercise **appellate jurisdiction** with respect to the decisions of the Autonomous Boards;
- lay down policies and codes to ensure observance of **professional ethics in the medical profession** and to promote **ethical conduct** during the provision of care by medical practitioners;
- frame **guidelines for determination of fees** and all other charges in respect of fifty percent of seats in private medical institutions and deemed to be universities which are governed under the provisions of this Act;

Composition:

- It consists of **33 members,** including the Chairperson (medical professionals only), 10 ex-officio members and 22 part-time members.
- **Medical Advisory Council**: It provides the platform through which the States or UTs can put forth their views and concerns before the NMC and advises the NMC on measures to determine and maintain minimum standards of medical education.

Four autonomous boards:

- Under-Graduate Medical Education Board
- Post-Graduate Medical Education Board
- Medical Assessment and Rating Board
- Ethics and Medical Registration Board

What is S.A.R.A.H.?

Recently, the World Health Organization (WHO) announced the launch of S.A.R.A.H., a digital health promoter prototype.

About S.A.R.A.H.:

- **Smart AI Resource Assistant for Health** (S.A.R.A.H.) is a digital health promoter prototype with enhanced empathetic response powered by **generative artificial intelligence (AI).**
- It is launched by the **World Health Organisation** (WHO). It aims to provide an additional tool for people to realize their rights to health, wherever they are.

Features:

- It is trained to provide information across **major health topics,** including healthy habits and **mental health**

- It has the ability to **support people** in developing better understanding of risk factors for some of the leading causes of death in the world, including cancer, heart disease
- It can help people **access up-to-date information** on quitting tobacco, being active, eating a healthy diet and de-stressing among other things.
- It can engage users 24 hours a day in **8 languages** on multiple health topics, **on any device.** It is now powered by **generative AI** rather than a pre-set algorithm or script helping her to provide more accurate responses in real-time.

Purple-striped jellyfish

Recently, a bloom of venomous mauve stinger or purple-striped jellyfish was reported by marine researchers across the Visakhapatnam coast.

About Purple-striped jellyfish:

- **Appearance:** It usually appears a blue purple (mauve) colour with a globe shaped umbrella covered in orangey brown warts.

Habitat: It is primarily pelagic or in the open ocean. However, this species can survive in benthic and temperate coastal habitats.

Distribution: It is found worldwide in **tropical and warm-temperature seas.** It is mainly found in the Indo-Pacific, Atlantic Ocean and the Mediterranean Sea.

Unique feature: Unlike other jellyfish species, it has stingers not just on the tentacles, but on the bell too. These are **bioluminescent**, having an ability to produce light in the dark.

- It is venomous and causes **varying degrees of illness** such as diarrhoea, extreme pain, vomiting and anaphylactic shock.

A jellyfish bloom is when the **population** of the species **increases** dramatically within a short period of time, usually due to a higher reproduction rate.

- According to marine biologists, jellyfish blooms are reported frequently as a **result of rising ocean temperatures,** one of the main causes of substantial population growth.