Presentation of credentials by Ambassadors

Context: Representatives from six nations have formally presented their credentials to the President of India.

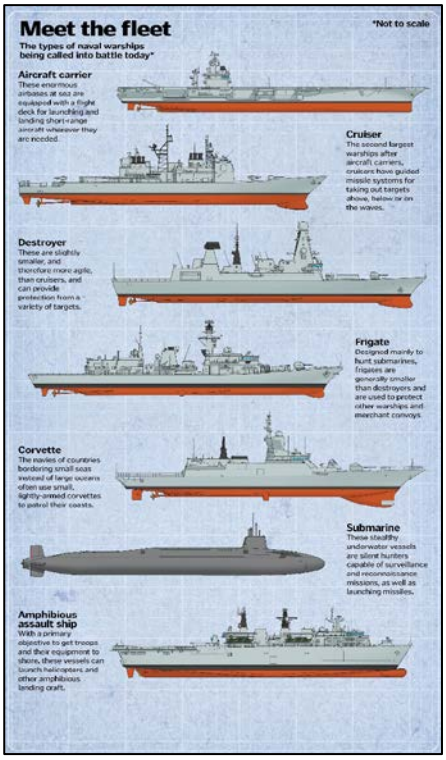
- Smt Droupadi Murmu, the President of India, received credentials from the Ambassador/High Commissioner of Ireland, Bosnia & Herzegovina, Armenia, Malaysia, Mali, and Marshall Islands at a ceremony held at Rashtrapati Bhavan on November 28, 2023.
- **Definition of Letter of Credence:**
  - A formal diplomatic letter designating a diplomat as an ambassador to another sovereign state.
  - Commonly referred to as diplomatic credentials.
- **Language Tradition:**
  - Traditionally written in French, the lingua franca of diplomacy.
  - Alternatively, it may be composed in the official language of the sending state.
- **Presentation Ceremony:**
  - Upon arrival at the diplomatic post, the ambassador-designate arranges an audience with the foreign minister.
  - Presents both a sealed original and an unsealed copy of credentials.
  - The unsealed copy is given to the foreign minister upon arrival.
  - The sealed original is personally presented to the head of state in a formal ceremony.
- **Initiation of Diplomatic Duties:**
  - Ambassadors do not commence their duties until their credentials are accepted.
  - Precedence within the diplomatic corps is determined by the date of credential presentation.
  - Entitled to diplomatic immunity upon entry into the host country.
- **Travel to Presentation Ceremony:**
  - Ambassador-designate travels to the ceremony in an official vehicle provided by the receiving state, accompanied by a military escort.
  - In constitutional monarchies and parliamentary democracies, the head of state or viceroy acts on government advice.
- **Symbolism in Presentation Ceremony:**
  - The foreign minister attends the head of state during the ceremony, symbolizing acceptance based on government advice.
  - Ambassador-designate uses both hands to present credentials to the head of state.
  - Presentation ceremonies often include elements accorded to heads of state and government.
- **Chargé-level Relations:**
  - When maintaining relations at the chargé d'affaires level, the letter of credence is written by the foreign minister and addressed to the counterpart.
  - The head of state is not directly addressed or presented with credentials, indicating lower diplomatic relations.
- **Commonwealth Practices:**
  - High commissioners from Commonwealth nations do not present letters of credence.
  - When two realms share the same monarch, the prime minister writes an informal letter of introduction.
  - In republics or nations with separate monarchs, high commissioners use letters of commission standardized in 1950–1951.

Yard 12706 (Imphal)

Context: Raksha Mantri Shri Rajnath Singh unveiled the crest of Project 15B stealth guided missile destroyer Yard 12706 (Imphal).

- **Crest Design:**
  - The crest pays tribute to Manipur's contribution to India's independence, sovereignty, and security.
  - Depicts Kangla Palace and 'Kangla-Sa,' a mythical guardian symbolizing protection.
- **Historical Significance:**
  - Kangla Palace is a vital historical and archaeological site in Manipur, representing the traditional seat of the past kingdom.
  - 'Kangla-Sa' is a mythical being, symbolizing the guardian and protector of Manipur's people and the state emblem.
- **Ship Details:**
  - Designed by the Indian Navy's Warship Design Bureau.
  - Built by Mazagon Dock Shipbuilders Limited (MDL), Mumbai.
  - Delivered to the Indian Navy on October 20, 2023.

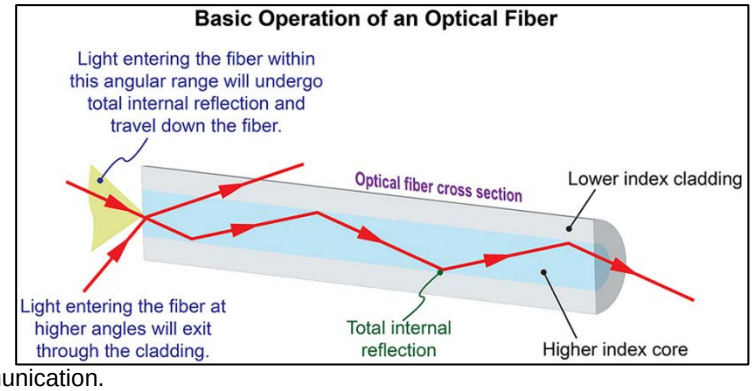
- **Technical Specifications:**
  - Guided missile destroyer with a displacement of 7,400 tons and an overall length of 164 meters.
  - Equipped with state-of-the-art weapons and sensors, including surface-to-air missiles, anti-ship missiles, and torpedoes.
  - Powered by Combined Gas and Gas (COGAG) propulsion, capable of speeds exceeding 30 knots (56 km/hr).
- **Indigenous Content:**
  - Approximately 75% indigenous content.
  - Includes Medium Range Surface-to-Air Missiles, BrahMos Surface-to-Surface Missiles, Indigenous Torpedo Tube Launchers, Anti-Submarine Indigenous Rocket Launchers, and a 76mm Super Rapid Gun Mount.
- **Achievements:**
  - Successful firing of an Extended Range BrahMos missile during pre-commissioning trials.
  - Shortest time for building and conducting trials for any indigenous destroyer.
  - Affirms the commitment to 'Aatmanirbhar Bharat'.
- **Naming Tradition:**
  - Maritime tradition and naval custom to name ships after prominent cities, mountain ranges, rivers, ponds, and islands.
  - The warship is named after the historic city of Imphal, making it the first capital warship named after a city in the North-Eastern region.



Optical Fibre Networks as Earthquake EWS

Context: Fibre-optic networks are considered valuable for earthquake early warning systems by researchers.

- Researchers from ETH Zurich and METAS suggest that fibre-optic networks can serve as earthquake early warning systems.
- They propose **using active noise suppression data** without requiring additional devices or expensive infrastructure.
- Active phase noise cancellation (PNC) can **measure seismic tremors underwater**, similar to noise-cancelling headphones eliminating ambient noise.
- In the optical data communication system, PNC determines ambient noise in the optical fibre by comparing the transmitted signal with a reflected partial signal.
- Earth's surface deformations due to earthquakes, water waves, air pressure differences, and human activity disturb optical fibres, producing noise during data transmission.
- Fibre deformations, caused by seismic activity, lead to a photo-elastic effect, altering the speed of light in the fibre and changing the light signal's frequency.
- **Optical Fibres**
  - Optical fibres consist of thin cylindrical strands of glass.
  - The diameter of a typical fibre is comparable to that of a human hair.
  - These fibres can efficiently carry diverse digital information, such as text, images, voices, and videos, across long distances at nearly the speed of light.
  - **Development and Significance of Optical Fibres:**
    - Charles Kao's prediction advocated glass fibres as superior for telecommunication.
    - Kao's contributions earned him a share of the 2009 Nobel Prize in physics.
    - Optical fibres play a crucial role in contemporary communication, including text messages and phone calls.



- **How Optical Fibres Work:**
  - Guided through total internal reflection, light, an electromagnetic wave, traverses within glass fibres.
  - The refractive index difference between glass and air enables the bouncing of signals encoded as electromagnetic waves.
  - Components of a fibre optic communication system include a transmitter, optical fibre, and receiver.
  - High data transmission rates and insensitivity to external perturbations are notable features.
- **Historical Development of Fibre Optic Cables:**
  - Light-guiding effects in transparent media observed in the 19th century.
  - Early demonstrations by Colladon, Babinet, and Tyndall.
  - Babinet's development of light-guiding through glass rods.
  - Initial applications in medicine and defense.
  - Significant leaps in the 1950s and 1960s, with the term "fibre optics" coined by Narinder Singh Kapany.
  - Kao's 1966 breakthrough in reducing signal decay in glass fibres.
  - Corning Glass Works achieving low signal loss in 1971.
- **Fibre Optic Cable Manufacturing:**
  - Modern manufacturing employs the fibre-drawing technique.
  - Preparation of a high-purity preform with an engineered refractive index profile.
  - Melting the preform and drawing it into a thin, long fibre.
  - Coating the fibre with a protective layer for strength and durability.
  - Optical fibres manufactured with less than 0.2 dB/km loss.
- **Future Prospects of Fibre Optic Cables:**
  - Widely used in telecommunication, medical science, laser technology, and sensing.
  - The Government of India's national mission on Quantum Technologies and Applications.
  - Growing possibilities of fibre optic networks in various applications.
  - Fibre optic communication poised at the forefront of a new era, alongside quantum optics.

NEWS IN BETWEEN THE LINES

Parthenon Sculptures

Recently, Greece denied making any agreement to avoid discussing the Parthenon Sculptures during a visit to the UK.

About Parthenon Sculptures:

- The Parthenon sculptures are considered to be some of the best examples of Greek art.
- The sculptures were designed to glorify Athens and its patron goddess Athena.
- They consist of 92 metopes portraying mythical battles, pediments illustrating Greek myths and a frieze displaying Athenians engaged in a religious procession.
- The sculptures were designed by the famous artist Phidias and took until 432 BC to complete.
- It became a symbol of the modern nation state of Greece following independence from the Ottoman Empire in 1832.
- The Parthenon Sculptures, also called the Elgin Marbles, came from the Parthenon temple in Athens.
- Most of the remaining sculptures are divided between the British Museum in London and the Acropolis Museum in Athens.

Kalakkad Mundanthurai Tiger Reserve

Recently, the researchers have discovered a new plant species in the genus 'Impatiens' (Balsaminaceae) in Kalakkad Mundanthurai Tiger Reserve, Tirunelveli, Tamil Nadu.

About Kalakkad Mundanthurai Tiger Reserve:

- The Kalakkad Mundanthurai Tiger Reserve (KMTR) is located in the South Western Ghats montane rain forests of Tamil Nadu.
- It is the second-largest protected area in Tamil Nadu.
- The reserve is part of the Agasthyamalai Biosphere Reserve.
- The IUCN considers it one of the five centers of biodiversity and endemism in India.
- The reserve was formed by merging Kalakad Wildlife Sanctuary and Mundanthurai Wildlife Sanctuary in 1988.
- It is also known as the "River Sanctuary,"with as many as 14 rivers originating from this Tiger Reserve.
- The reserve has forest rest houses and dormitories at Mundanthurai and Thalayanai.

Flora: The area encompasses vegetation ranging from dry thorn forests to dry deciduous, moist deciduous, and patches of West Coast wet evergreen forests in its higher elevations.

Fauna: The Reserve is home to various animals like tigers, leopards, elephants, Nilgiri tahr, wild boar, Lion-tailed Macaque, sambar deer and a variety of birds including the Nilgiri Pipit and Blue Winged Parakeet.

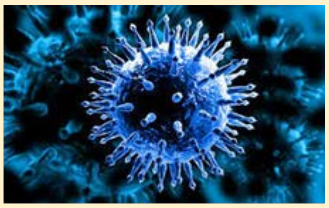
AstroSat

Recently, AstroSat has successfully detected its 600th Gamma-ray Burst (GRB).

About AstroSat:

- AstroSat is India's first multi-wavelength space observatory.
- It is a dedicated mission by ISRO to study celestial sources in the X-ray, optical and UV spectral bands simultaneously.
- It was launched on September 28, 2015, via PSLV from Sriharikota.
- Its aims is to understand energetic processes in binary star systems with neutron stars and black holes.
- It allows observing different space objects in multiple wavelengths, aiding comprehensive research.
- Throughout its 5-year mission life, the control of AstroSat is overseen by MOX at ISTRAC, Bengaluru.
- Five scientific tools (Visible (320–530 nm), Near UV (180–300 nm), Far UV (130–180 nm), Soft X-ray (0.3–8 keV and 2–10 keV), and Hard X-ray (3–80 keV and 10–150 keV)) aboard AstroSat facilitate imaging and the study of cosmic features across varying wavelengths.

A(H1N2) Virus



Recently, Britain confirmed its first human case of the A(H1N2)v flu strain, akin to a virus found in pigs.

About A(H1N2) Virus:

- In August 2023, a novel variant of the Influenza A(H1N2) virus was officially confirmed in Michigan, USA,
- It is a subtype of the influenza A virus (most common type of influenza), which is also known as bird flu.
- It predominantly found in swine populations worldwide.
- The strain is similar to a virus that is currently circulating in pigs.
- The four types of influenza viruses are A, B, C, and D. Influenza A and B viruses cause seasonal epidemics.
- **Symptoms:** Fever, Coughing (barking, Sneezing, Breathing difficulties, Eye redness or inflammation, Not eating).

Place in News

Zimbabwe

Recently, Zimbabwe has announced that it will construct its first utility-scale geothermal energy Independent Power Producer (IPP) and support the reduction of greenhouse Gas (GHG) emissions in the country.

Zimbabwe (Capital: Harare)

Location: Zimbabwe is a landlocked country in Southern Africa.

Political Boundaries: It is bordered by South Africa to the south, Botswana to the west and southwest, Zambia to the northwest and Mozambique to the east and northeast.

Geographical Features:

- Highest points of Zimbabwe is Mt. Nyangani.
- Lake Kariba stands as the largest man-made lake by volume, positioned on the border between Zambia and Zimbabwe.
- Zimbabwe is traversed by significant rivers including the Zambezi, Pungwe, Buzi, Save, and Limpopo.

POINTS TO PONDER

- Which country launched the 'Al Dhafra' Project, the world's largest single-site solar power plant? **- UAE**
- The Asian Development Bank (ADB) approved USD 500 million loan to enhance tertiary health care and medical education in which state? **- Maharashtra**
- Which public sector enterprise was awarded the 'Best Employer for Policies in Diversity and Inclusion' award by ASSOCHAM? **- REC Limited**
- What is the mascot of the maiden Khelo India Para Games 2023? **- Ujjwala**
- The Union Government has exempted which institution from the purview of the Right to Information Act, 2005? **- CERT-In**