

INTERNATIONAL RELATION**What's the latest blip in India-Maldives ties?**

- **Context:** In early December 2023, the Maldives Cabinet decided against renewing a Memorandum of Understanding (MoU) with India for cooperation in hydrography. The agreement, which was signed in 2019, is due to expire in 2024. Coming soon after newly elected President Mohamed Muizzu's pledge to send back Indian troops currently stationed in the Indian Ocean archipelago, the move was yet another indication of his government's intention to reverse the former Ibrahim Mohamed Solih administration's 'India first' policy.
- **What is hydrography?**
 - It is the science of studying oceans, seas, and other water bodies, by compiling and analysing data, maps, and charts. Branching off from applied sciences, it looks at measuring and describing the physical attributes of water bodies and predicting how they might change over time. While it is said to be undertaken primarily for safety of navigation, it also supports other activities, such as economic development, security and defence, scientific research, and environmental protection. Hydrographical measurements include tidal, current and wave information.
- **What is India's expertise?**
 - India has been an active member of the International Hydrographic Organization (IHO) since 1955. The Indian Naval Hydrographic Department (INHD), or the Marine Survey of India earlier, was established in 1874 in Kolkata. It is the nodal agency for hydrographic surveys and has a fleet of indigenously built modern survey ships.
 - India partners with many countries in the Indian Ocean Region and African and East Asian countries such as Mauritius, Seychelles, Tanzania, Maldives, Mozambique, Vietnam, Myanmar, Kenya, and Sri Lanka. According to the INHD, its role has broadened over time, owing to the heightening global character of hydrography and "its growing potential as a force multiplier" in terms of maritime diplomacy. Personnel from 39 countries have trained at the National Institute of Hydrography, functioning under the INHD.
- **Why was the 2019 MoU significant?**
 - The MoU was signed in June 2019, during Prime Minister Narendra Modi's state visit to the Maldives. It was Mr. Modi's first overseas visit after assuming office for his second term, and his second visit to the Maldives since he participated at President Solih's swearing-in ceremony in 2018. Months before the time the MoU was inked, President Solih and the ruling Maldivian Democratic Party (MDP) had secured a landslide win in the general elections.
 - The two Indian Ocean neighbours, and their leaders, backed by a decisive majority, committed to close cooperation in development, defence and maritime security. The first meeting of the Joint Commission on Hydrography was held in the Maldives in September 2019.
 - The agreement, the Maldives National Defence Force (MNDF) and the Indian Navy have carried out three joint hydrographic surveys in 2021, 2022, and 2023.
- **Why has the Cabinet decided against renewing the agreement?**
 - On the joint hydrographic survey, according to senior official the decision was aligned to the current administration's pledge to terminate all agreements with foreign parties that are detrimental to or endanger the national security of the Maldives. It is in the best interest of Maldivian sovereignty that this capacity is improved within our own military, entrusting them with the responsibilities of surveilling and policing our waters, and excluding the participation of any foreign party in such an endeavour.
 - The message appeared to be in line with Mr. Muizzu's broad election campaign, pledging to remove Indian troops from the country and "restoring the Maldives's sovereignty". The core demand of the 'India Out' campaign led by former President Abdulla Yameen, found mention in President Muizzu's first set of official announcements.
- **How has India responded?**
 - In its first response yet to the Cabinet decision According to the the Ministry of External Affairs India had a "proven track record" in the field of hydrography. And India have also been cooperating with many countries in the Indian Ocean region on hydrography and various elements related to that.
- **What does this mean for India-Maldives ties?**
 - In recent developments, it appears as if India will have to brace for a challenging phase of its Male partnership. Maldives is a member of the **Colombo Security Conclave**, an initiative aimed at enhancing Indian Ocean maritime security, that includes India, Sri Lanka, and Mauritius.

- However, recently the Maldives skipped the latest round of the Conclave's NSA-level meet held in Mauritius. Notably, it coincided with Maldivian Vice-President Hussain Mohamed Latheef's visit to China, to attend the China-Indian Ocean Region Forum on Development Cooperation. The MEA's response to the termination of the Maldives's joint hydrographic initiative with India, pointed to India's belief that its neighbours should tap the "benefits" of India's expertise. How it will navigate the choppy waters connecting its southern neighbour will be closely watched.

DEFENCE

INS Imphal

- **CONTEXT: INS Imphal (Pennant D68), the third of four warships of Project 15B that together form the Visakhapatnam class stealth-guided missile destroyers, is set to be commissioned into the Indian Navy on December 26.**
- **What is Project 15B?**
 - Between 2014 and 2016, the Indian Navy commissioned three guided missile destroyers of Kolkata class under a project codenamed '15A'. The Kolkata class included INS Kolkata, INS Kochi and INS Chennai. These ships were a step ahead of their precursor Delhi class of ships, which included INS Delhi, INS Mysore and INS Mumbai, built under Project 15 and commissioned between 1997 and 2001.
 - Mazagon Dock Shipbuilders Limited (MDSL), one of India's key Defence Public Sector Undertakings (PSUs), has built all these ships. A ship class signifies a group of ships built with similar tonnage, usage, capabilities and weaponry.
 - For building the advanced variants of the Kolkata class guided missile destroyers, a contract for construction under the project codenamed '15B' was signed in January 2011. The lead ship of Project 15B, INS Visakhapatnam (Pennant No D66), was commissioned into the Indian Navy in November 2021 and the second ship INS Mormugao (D67) in December 2022. The fourth ship, D69, which when commissioned will be christened INS [Surat](#), was launched in May last year.
 - Designed by the Indian Navy's in-house warship design entity Warship Design Bureau, and built by MDSL in Mumbai, the four ships of Project 15B are christened after major cities from all four corners of the country — Visakhapatnam, Mormugao, Imphal and Surat. The class is identified by its lead ship, in this case INS Visakhapatnam.
- **The construction of Yard 12706, now INS Imphal**
 - Four major ceremonial events mark a ship's life – keel laying, launching, commissioning and decommissioning. The keel laying ceremony originates from the tradition of laying one central timber which forms the backbone of the ship.
 - For modern ships, keel laying is marked by the first of the modular components of the ship being placed in the dock. The time taken to build Imphal and the period for her trials is the shortest for any indigenous destroyer. The keel of INS Imphal (which was referred to as Yard Number 12706) was laid on May 17, 2017.
 - The next milestone is launching when the ship is transferred from the building site into the waters. Yard 12706 was launched into the water on April 20, 2019. It sailed out for her maiden sea trials on April 28 earlier this year and completed a comprehensive schedule of trials, both in the harbour and at sea, leading up to its delivery on October 20. This was done within a record time frame of six months – the fastest for a ship of its size. On Tuesday, the ship is set for commissioning, marking the day the ship joins the active service.
- **Technological Characteristics and Armament of Visakhapatnam class**
 - The four ships of the class are 163 meters long and 17.4m wide, with a displacement of 7,400 tonnes. To put it in perspective, India's first indigenous aircraft carrier INS Vikrant is 262 meters in length, 62 meters wide and displaces around 43,000 tonnes when fully loaded. The ship has a 'combined gas and gas' (COGAG) configuration integrating four gas turbines. The propulsion system allows the ship to reach a maximum speed of 30 knots and a maximum range of 4000 nautical miles.
 - Ships of Visakhapatnam class are operated by a crew of around 350, including 50 officers and 250 sailors. The accommodation and working areas have superior ergonomics and habitability as compared to its predecessor classes of destroyers.
 - Visakhapatnam class of destroyers have multiple fire zones, elaborate battle damage control systems and distributional power systems for improved survivability and reliability for operating in extreme operational and conflict scenarios. The class also has a total atmospheric control system (TACS) that offers protection to the crew from chemical, biological and nuclear threats.

- They are also equipped with a state-of-the-art combat management system that can evaluate threats using analytical tools and create a tactical picture that includes available resources on board. This helps to allocate the resources based on the tactical picture compiled and the weapons package available on board. The class has a secure network to handle data from all the sensors and weapons systems.
- The arsenal of the Visakhapatnam class has BrahMos surface-to-surface cruise missiles and vertically launched Barak-8 surface-to-air missiles for long-range engagement of shore and sea-based targets. The forward bow deck of the ship has a 127 mm main gun and also has four AK-630 30mm guns for close-point engagement.
- The ship is armed with indigenously developed 533 mm torpedo launchers and RBU-6000 anti-submarine rocket launchers to provide anti-submarine warfare capability. It can operate two multi-role helicopters, including Sea King or HAL Dhruv. The ship has a rail-less helicopter traversing and also has a hangar facility.
- **Strategic Significance**
- Technically, destroyers are a category of warships that have high speed, manoeuvrability and longer endurance. They are designed to be part of naval formations like a fleet or a carrier battle group also known as carrier strike group.
- The modern destroyers that are swift, sleek and difficult to detect, primarily protect the fleets and carrier battle groups from the short-range attackers from surface, air and sub-surface. The guided-missile destroyers are the destroyers that are armed with guided missiles for anti-aircraft warfare, anti-surface operations and anti-submarine warfare.
- Because of the speed, manoeuvrability and striking capability, the guided missile destroyers are a key asset in various types of naval operations, mainly offensive. Being a follow-on of the Kolkata class, the Visakhapatnam class incorporates not just the feedback and suggestions from the Navy but also several new features. The state-of-the-art stealth feature makes Visakhapatnam class have the radar signature of a very small ship. A very high indigenous component gives this platform a strategic edge.
- Visakhapatnam class is arguably one of the most advanced classes of ships in the Indian Navy. It can operate as an independent offence platform even when not part of a large formation. With all its modern sensors and communication facilities, the class is a key asset in network-centric warfare, which denotes the use of information technology and computer networking tools to form networks of various force elements in play in a conflict scenario.

INS Imphal will have the unique distinction of being the largest and the most advanced destroyer to be ever named after a city from the North-east. This is a befitting tribute to Manipur's sacrifices and contributions in India's freedom struggle, be it the Anglo-Manipur War of 1891, or Netaji Subash Chandra Bose's hoisting of the INA flag for the first time on April 14, 1944 at Moirang, or the pitched Battle of Imphal between British and Imperial Japanese forces, with Indians on both sides, that turned the tide of the Burma campaign and shaped the outcome of the Second World War and the new world order. The commissioning of Imphal, thus, underscores the salience and contribution of the city of Imphal, the state of Manipur and the larger North-eastern region to national security, sovereignty and prosperity.

PRELIMS

Ujjain and the Prime Meridian

- **CONTEXT:** Madhya Pradesh Chief Minister has said that India, more specifically Ujjain, set the world's time some 300 years ago, before the Prime Meridian was shifted, first to Paris, and then to Greenwich (London).
- Ancient Indians recorded dates using the unit of the lunar day (tithi), and the solar calendar was known from Gupta times onward.
- Astrological and mathematical calculations required fairly accurate measurements; there was, however, no way for common people to precisely measure time in a day-to-day sense.
- The Industrial Revolution changed things in two ways.
- Better and more accurate clocks began to be produced by the second half of the 18th century.
- With the advent of the modern factory, it became important not only to keep time, but to also make the most of it.
- **When did the concept of a national time arise?**
- In the early part of the Industrial Age, time remained essentially local. Each factory, and each town with a clock tower, set its own time. There was no standardisation, nor was there any need for it.
- The need for standardisation first arose in the 19th century, as the world became more interconnected due to the spread of technological innovations such as railways, steamships, and telegraph.

- The British Empire, for instance, saw standardised time as a tool to synchronise its vast overseas possessions, ease the spread of information and transportation, and help maintain control.
- Thus, there came to be national prime meridians — reference points to determine time worldwide, but differing from country to country. So France had the Paris Meridian, Germany the Berlin Meridian, Denmark the Copenhagen Meridian, and the British, the Greenwich Meridian.
- These respective Prime Meridians of these empires were defined as 0° longitude in their respective maps, and their colonial possessions' time was determined accordingly.
- **Move from national to global time:**
- In 1883, a convention of railroad executives met in Chicago and agreed to the implementation of five time zones in North America, using the Greenwich Mean Time as the basis.
- The following year, representatives from 26 countries met in Washington DC at the International Meridian Conference.
- The Conference adopted the meridian passing through the centre of the transit instrument at the Observatory of Greenwich as the initial meridian for longitude.
- **Basis of the claim about Ujjain:**
- The earliest postulation of standard time in the Indian context came from the 4th century CE Sanskrit treatise Surya Siddhanta.
- It described a Prime Meridian passing through the cities of Rohitaka (modern-day Rohtak) and Avanti (modern-day Ujjain).
- Thus, in Indian astronomical traditions, Ujjain has always occupied a central position, with some modern scholars calling it India's Greenwich (although Indian Standard Time is mentioned with respect to the observatory in Mirzapur).
- In 1719, Sawai Raja Jai Singh of Jaipur built a famous observatory in the city, one of the five he built during his reign.
- **What is a meridian?**
- A meridian is a north-south line, selected as the zero reference line for astronomical observations. By comparing thousands of observations taken from the same meridian it's possible to build up an accurate map of the sky.
- **Why does the Prime Meridian run through Greenwich?**
- There were two main reasons for the choice. The first was the fact that the USA had already chosen Greenwich as the basis for its own national time zone system.
- The second was that in the late 19th century, 72% of the world's commerce depended on sea-charts which used Greenwich as the Prime Meridian.
- The decision was based on the argument that by naming Greenwich as Longitude 0°, it would be advantageous to the largest number of people. Therefore the Prime Meridian at Greenwich became the centre of world time.
- **What is Greenwich Mean Time (GMT)?**
- Since the late 19th century, the Prime Meridian at Greenwich has served as the reference line for Greenwich Mean Time, or GMT. Before this, almost every town in the world kept its own local time.
- There were no national or international conventions which set how time should be measured, or when the day would begin and end, or what length an hour might be.
- When the railway and communications networks expanded in the 1850s and 1860s, there needed to be an international time standard. Greenwich was chosen as the centre for world time.

National Geoscience Data Repository Portal

- **Context: The Ministry of Mines launched the National Geoscience Data Repository Portal (NGDR) recently.**
- The National Geoscience Data Repository (NGDR) has been created, as a part of the National Mineral Exploration Policy, 2016, hosting all baseline and exploration-related geoscientific data in a single GIS platform.
- Its aim is to expedite, enhance and facilitate the exploration coverage of the country.
- The NGDR initiative is spearheaded by Geological Survey of India (GSI) and Bhaskaracharya Institute of Space Applications and Geoinformatics (BISAG-N). The Geological Survey of India (GSI) was given the responsibility to establish NGDR.
- The NGDR will make available all geological, geochemical, geophysical and mineral exploration data in public domain on a digital geospatial platform.
- This will include baseline geoscience data and all mineral exploration information generated by various central and state government agencies and mineral concession holders.

➤ **Key Features of the National Geoscience Data Portal (NGDR):**

- **Centralized Access:** Provides a centralized repository of diverse geoscience datasets, including geological maps, mineral resources, seismic data, and environmental information.
- **User-Friendly Interface:** An intuitive interface designed to cater to a wide range of users, enabling seamless navigation and exploration of data.
- **MERT template:** The Mineral Exploration Reporting Template facilitates all the geoscientific stakeholders to submit their data in the NGDR portal in a standard reporting template.
- **Analytical Tools:** Equipped with state-of-the-art analytical tools to interpret and extract valuable insights from complex geospatial data.
- **Open Access:** Encourages transparency and knowledge sharing by offering open access to a wealth of geoscience information.

ANSWER WRITING

Que. Artificial Intelligence in Indian healthcare sector is leading towards a promising future with challenges. Discuss.

Answer

Artificial intelligence (AI) is rapidly transforming the healthcare industry in India, bringing unprecedented tools for diagnosis, treatment and patient care. AI expenditure in India is expected to reach \$11.78 billion by 2025 and add \$1 trillion to India's economy by 2035, as per a World Economic Forum report. The AI in Healthcare Market is projected to grow from \$14.6 Billion in 2023 to \$102.7 Billion by 2028.

Applications of Artificial Intelligence in Indian healthcare sector

- **Disease detection and diagnostics:** AI-embedded remote patient monitoring systems enable proactive interventions and personalized care for patients with chronic conditions. For eg. Through Google's AI facility, the prediction of cardiovascular events can now be achieved through the analysis of an individual's eye scan. This can mark a shift from conventional methods like CT scans, MRIs, and X-rays.
- **Patient-facing applications:** AI aids in saving time by automating mundane and routine tasks within the daily clinical routine. For instance, chatbots help patients to raise their queries regarding appointments, bill payments, and more. Virtual health assistants help in answering patients' queries via calls and emails, scheduling appointments with doctors, sending follow-ups and clinical appointment reminders to patients, etc.
- **Accelerating drug delivery:** Moreover, machine learning models are accelerating drug discovery and development, leading to more targeted and effective treatments.
- **Process optimization:** AI processes are being developed to create new efficiencies in areas such as hospital bed management and processing of insurance claims.
- **To perform Surgeries:** AI is particularly effective in laparoscopic and robotic surgery, where a video screen can display information or guidance from AI during the operation.

Challenges associated with use of AI in healthcare sector:

- **Access to data:** AI systems depend on the availability of large amounts of data. This poses a major impediment for building indigenous AI interventions in India. Datasets for healthcare in India are fragmented, dispersed and incomplete
- **Security concerns:** There are concerns about the implications for patient privacy and potential bias in algorithms. As AI becomes more prevalent in healthcare, it is essential to prioritize data security.
- **Cost factor:** AI systems can be expensive to train, test and deploy. Datasets are expensive to collect, and computing power and storage space is expensive.
- **Infrastructure issues:** The unavailability of digital infrastructure required to build AI systems is a further constraint. Cloud-based computing infrastructure is mostly concentrated in servers outside India.
- **Misuse:** The linking of health data with other systems, and the new avenues for discrimination this may create, gives rise to significant concern. Health insurance data, for example, can be leveraged by banks to evaluate eligibility for loans.

It is important to note that every new medical technology, including AI, will undergo rigorous validation. This ensures that the implementation of AI in healthcare is done in a responsible and compliant manner, prioritizing patient safety and well-being.

MCQs

- With reference to Odisha polity Justice Raj Kishore Das Committee recently seen in news is related to which of the following?
 - District reorganization**
 - Land Assessment
 - State Police reform
 - Rural irrigation
- Consider the following statements
 - The Colombo Security Conclave is a regional security grouping.
 - It was initially formed in 2011 as a trilateral Indian Ocean maritime security grouping of India, Sri Lanka and the Maldives.
 - It was revived again in 2021. The Colombo Security Conclave has since expanded both its membership as well as scope.
 - Colombo Security Conclave envisages sharing intelligence and collaborating on the security aspects of marine security, human trafficking, counter-terrorism, and cyber security.

How many above statements is/are correct?

 - Only one
 - Only two
 - Only three
 - All the four**
- Consider the following statements
 - INS Imphal is the third ship of the Visakhapatnam-class stealth guided missile destroyer of the Indian Navy.
 - She is being constructed at Mazagon Dock Limited (MDL) and has been launched on 20 April 2019.
 - The ship started sea trials on 28 April 2023, and was delivered to the Indian Navy on 20 October 2023
 - She was commissioned on 26 December 2023.

Which of the above statement/s is/are correct?

 - 1 and 2 only
 - 2 and 3 only
 - 3 and 4 only
 - All of the above
- With reference to 'Veer Bal Diwas' consider the following
 - In January 2022, the Centre announced that December 26 would be observed as 'Veer Bal Diwas' to mark the martyrdom of Guru Gobind Singh's younger sons.
 - The historic battle of Chamkaur in December 1704 was fought here when a small number of Sikhs took on the huge army of the Mongol and the hill kings.

Which of the above statement/s is are correct?

 - 1 only**
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
- Which of the following nations is not a part of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation?
 - Nepal
 - Sri Lanka
 - China**
 - Bangladesh
- With reference to the Global Biofuels Alliance, consider the following statements:
 - India and Germany will work together towards the development of a Global Biofuels Alliance.
 - The alliance is aimed at facilitating cooperation and intensifying the use of sustainable biofuels, including in the transportation sector.
 - The United States (US) and Brazil are global leaders in biofuels.

How many of the statements given above are correct?

 - Only one
 - Only two**
 - All three
 - None
- Sievierodonetsk is a major industrial centre known for its chemical plants and machine-building factories. It is located in:
 - Russia
 - Romania
 - Israel
 - Ukraine**
- Consider the following crops:
 - Wheat
 - Sunflower
 - Barley
 - Coffee

How many of the above crops are covered under the Minimum Support Price?

 - Only one
 - Only two
 - Only three**
 - All four
- He was the founder of Sikhism and the first of its nine gurus. His teachings laid the ground for the emergence of a distinct faith. Among his followers were both lower-caste Hindus and Muslim peasants. He is said to have travelled as far as Sri Lanka, Baghdad and central Asia to spread his teachings. His last journey was to Mecca and Madina, the holiest sites in Islam, and he visited sites revered in other religions, too. The above-mentioned lines refer to
 - Guru Gobind Singh
 - Guru Har Krishan
 - Guru Nanak**
 - Guru Tegh Bahadur
- Consider the following pairs:

(Colour Code)	(Stage of Warning)
1. Orange	Cyclone Alert
2. Yellow	Cyclone Warning
3. Red	Post landfall out look

How many of the pairs given above are correctly matched?

 - Only one**
 - Only two
 - All three
 - None
- Match the columns

Column A	Column B
1. Prime Meridian	a. Hottest region
2. Equator	b. Greenwich
3. Torrid Zone	c. Poles
4. Axis	d. Great Circle

Options :

 - 1 - a , 2 - c , 3 - d , 4 - b
 - 1 - b , 2 - a , 3 - d , 4 - c
 - 1 - b , 2 - d , 3 - a , 4 - c**
 - 1 - d , 2 - b , 3 - c , 4 - a