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Daily Current Affairs

To The Point

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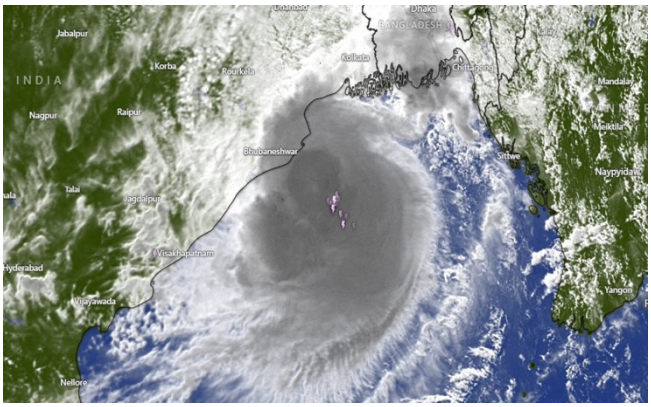
GS Paper 1 – Geography

1 Severe Cyclonic Storm Dana Makes Landfall on Odisha Coast



Context: On the night of **October 24**, **Cyclone Dana** made landfall along the Odisha coast with wind speeds reaching between **100 to 120 km/h**. This severe cyclonic storm was marked by intense rainfall, high winds, and storm surges affecting coastal areas, marking a significant weather event in the region.

About Tropical Cyclones:

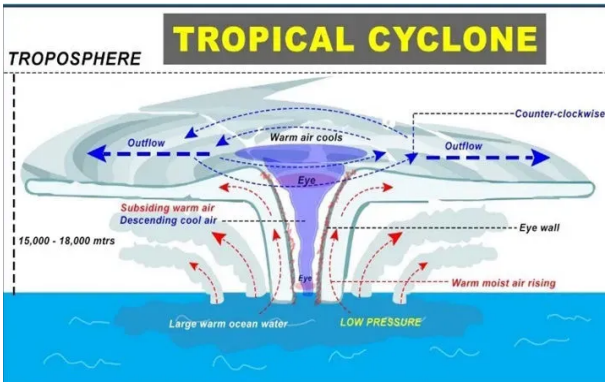
- **Definition**: Tropical cyclones are intense weather systems that form over **warm ocean waters** between the **Tropics of Capricorn and Cancer**. According to the **World Meteorological Organization (WMO)**, they are classified as tropical cyclones when wind speeds exceed **Gale Force (minimum 63 km/h)**.
- **Formation**: These storms form from the combined heat from the sea and atmospheric conditions near the equator.

Characteristics of Tropical Cyclones:

- **Calm Eye**: The center of a tropical cyclone, known as the "eye," is relatively calm and characterized by very low pressure.
- **High Wind Speeds**: The average wind speeds can exceed **120 km/h**.
- **Closed Isobars**: Cyclones feature closely spaced isobars, which increase wind speeds.
- **Seasonality**: Tropical cyclones tend to occur during specific seasons and follow trade wind paths from **east to west**.

Classification by Wind Speed (Indian Meteorological Department)

1. **Depression**: 31–49 km/h
2. **Deep Depression**: 50-61 km/h
3. **Cyclonic Storm**: 62–88 km/h
4. **Severe Cyclonic Storm**: 89-117 km/h
5. **Very Severe Cyclonic Storm**: 118-166 km/h



6. **Extremely Severe Cyclonic Storm**: 166-221 km/h
7. **Super Cyclonic Storm**: Above 222 km/h

Saffir-Simpson Hurricane Wind Scale:

- Cyclones are also categorized based on wind speed into **Category 1 to 5**, with **Category 5** being the most intense, having winds of **252 km/h or higher**.

Regional Names of Tropical Cyclones:

- **Hurricanes**: Caribbean Sea and Atlantic Ocean
- **Typhoons**: Northwest Pacific, especially East and Southeast Asia
- **Cyclones**: Indian Ocean and Southwest Pacific
- **Willy-Willies**: Australian region

Naming of Cyclones:

- **Cyclone Dana**: The name "Dana" was proposed by **Qatar** and selected by the WMO/ESCAP for this cyclone.
- **Process**: Tropical cyclone names are contributed by 13 member countries under the WMO/ESCAP, with each country suggesting a list of 13 names. The **India Meteorological Department (IMD)**, as one of the **six Regional Specialized Meteorological Centres (RSMCs)**, assigns these names sequentially.

Cyclone Landfall:

- **Definition**: Landfall occurs when the cyclone's **eye** reaches the coastline.
- **Eye Characteristics**: This is a calm area in the storm's center, often with clear skies.
- **Impact**: Before landfall, the cyclone's outer bands bring strong winds, heavy rain, and storm surges to the coast.

This recent **landfall of Cyclone Dana** on the Odisha coast underscores the importance of continuous monitoring and preparedness in the face of tropical storms, which can significantly impact coastal communities and infrastructure.

GS Paper 2 – Social Justice and Health Issues

2 Minimum Dietary Diversity among Children in India

Context: A recent study highlights that **77% of children in India aged 6-23 months** lack **Minimum Dietary Diversity (MDD)**, as per WHO standards.

Minimum Dietary Diversity (MDD) Defined:

According to the **World Health Organization (WHO)**, **Minimum Dietary Diversity** is met when a child's diet includes **five or more** of the following eight food groups:

- Breast milk
- Grains
- Legumes
- Dairy products
- Flesh foods (e.g., meat, fish)
- Eggs
- Fruits and vegetables

When a child consumes foods from **fewer than five of these groups**, it is considered **Minimum Dietary Diversity Failure (MDDF)**.

Key Findings of the Study (2019-2021):

- **Regional Disparities:** The **central region** (Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, Madhya Pradesh) shows over **80% MDDF** among children.
- **Age Impact: Younger children** (6-11 months) experience **highest MDDF (87%)**.
- **Vulnerable Groups:** MDDF rates are highest among **Other Backward Classes (OBC) (79%)**, followed by **Scheduled Castes (77.2%)** and **Scheduled Tribes (76%)**.
- **Mother's Education and Exposure:** Children of **illiterate, young, rural-residing mothers** with limited exposure to mass media are more likely to have diet deficiencies.

Issues in Ensuring Dietary Diversity:

- **Nutritional Composition:** Minimal consumption of fruits, vegetables, and animal products.
- **Education Levels:** Illiterate mothers show an **MDDF rate of 81%**, compared to **75% for educated mothers**.

Recommendations:

1. **Targeted Outreach:** Prioritize outreach to **pregnant women**, especially those with **high-risk pregnancies**.
2. **Community Engagement:** Use **local governance** structures to promote nutrition activities.

Initiatives in India to Combat Malnutrition:

- **POSHAN Abhiyan:** Increases nutrition awareness through **Jan Andolans** focusing on pregnant women, lactating mothers, and young children.
- **Rashtriya Poshan Mah:** Encourages **inter-ministerial collaboration** to engage communities in nutrition awareness.
- **Integrated Child Development Services (ICDS) Scheme:** Provides support to **children aged 0-6 years**, as well as pregnant and lactating women, promoting child health and nutrition.

The study emphasizes the need for **enhanced dietary diversity** to support the growth and development of India's children, especially in **vulnerable communities** and **low-education environments**.

GS Paper 3 – Science and Technology

3 Venture Capital Fund for Space Sector under IN-SPACe

Context: Recently, Union Cabinet Approves **₹1,000 Crore Venture Capital Fund for Space Sector under IN-SPACe.** **A** Venture Capital (VC) Fund **provides private equity financing for** early-stage startups **with high growth potential, specifically supporting innovative, high-risk sectors such as space technology.**

About the VC Fund for the Space Sector:

- **Funding Scope:** Targets startups across the entire **space supply chain**—upstream, midstream, and downstream.
- **Financial Structure:** Operates over **five years** with an annual fund deployment of **₹150-250 crore**.
- **Investment per Startup:** Between **₹10-60 crore**, supporting around **40 startups** in total.

Strategic Goals:

1. **Capital Infusion:** Designed to **attract additional investment** for later-stage growth.
2. **Growth Acceleration:** Aims to stimulate a **five-fold expansion** in India's space economy over the next decade.
3. **Technological Advancements:** Promotes private sector-driven **innovation in space technology** to solidify India's global leadership.

Benefits of the Fund:

- **Retention of Space Companies:** Keeps space-related enterprises based in India.
- **Job Creation:** Expected growth in fields like **engineering, software development, data analysis, and manufacturing**.
- **Innovation Ecosystem:** Drives global competitiveness by fostering a **dynamic startup environment**.

India's Space Sector Goals:

India currently ranks **5th globally** in the space economy, with a 2-3% share, valued at **$8.4 billion**. The fund aims to help India reach **$44 billion by 2033**.

About IN-SPACe:

- **Established:** 2020, as a **single-window, autonomous agency** under the Department of Space (DOS).
- **Role:** Acts as a bridge between **ISRO and Non-Governmental Entities (NGEs)**, facilitating private sector involvement.
- **Functions:** Authorizes and oversees various space-related activities like **launch vehicle and satellite development**, and **sharing of space infrastructure**.

Private Sector Milestone:

India's first **private launch vehicle**, **Vikram-1**, developed by **Skyroot Aerospace**, highlights the increasing role of private sector initiatives in advancing India's space capabilities.

The VC fund, under IN-SPACe, is a key step toward nurturing a **sustainable and competitive space ecosystem** in India, positioning it as a global space leader.

GS Paper 3 – Environment and Ecology

4 UN COP16 Nature Summit to Debate Digital Sequence Information (DSI) Rules

Context: COP16 aims to develop a **unified, multilateral framework** to regulate **Digital Sequence Information (DSI)** and to generate conservation revenue through its utilization.

About Digital Sequence Information (DSI):

- **Definition:** A policy term for **genomic and related digital data**, including DNA, RNA, and protein sequences.
- **Scope:** Broadly represents **genetic resources** in digital form; however, its exact interpretation is yet to be standardized.

Significance of DSI:

1. **Biological Research:** Supports **evolutionary studies** and **bioprospecting** (e.g., SARS-CoV-2 DSI used for COVID-19 diagnostic kits).
2. **Agriculture and Food Security:** Aids in developing **climate-resilient, pest-resistant crops** for food security.
3. **Species Conservation:** Assists in identifying **threatened species** and **tracking illegal wildlife trade**.

Challenges with DSI:

- **Lack of Accountability:** Public DSI databases, established before the **CBD** (1992), are not regulated under its provisions.
- **Equitable Benefit Sharing:** Sectors using DSI generate **$1.6 trillion** annually, yet benefits are rarely shared with countries or communities of origin.
- **Other Issues:** Include **privacy**, **data security**, **ownership**, and **technological constraints**.

Initiatives on DSI:

- **Kunming-Montreal Global Biodiversity Framework: Target 13** promotes equitable benefit sharing from DSI on genetic resources.
- **India's Digital Sequencing Initiatives:** Includes projects like the **Genome India Project**, which aims to map India's genetic diversity.

COP16's work to establish DSI rules could significantly impact **global conservation efforts** by ensuring **fair access** and **benefit sharing** from biological data.

GS Paper 2 – Polity

5 Supreme Court Directions to Ensure Free and Timely Legal Aid for Prisoners

Context: In the **Suhas Chakma vs. Union of India** case, the Supreme Court issued crucial directions to strengthen **legal aid access** for prisoners, emphasizing timely, free, and effective support through structured initiatives by legal authorities.

Key Highlights of Court Directions:

1. **Role of NALSA and State/District Legal Services Authorities:** The **National Legal Services Authority (NALSA)**, in coordination with State and District Legal Services Authorities, is responsible for implementing **Standard Operating Procedures (SOPs)** to provide prisoners access to legal aid.
2. **Awareness Initiatives:** The Court urged for literature in **local languages** and **awareness campaigns** to inform eligible prisoners of their right to legal aid.
3. **Display of Legal Aid Information:** The Court directed the installation of **display boards** with contact details of the nearest legal aid offices at accessible locations such as **police stations, post offices, and transit hubs** (bus stands, railway stations).

Statutory Framework for Legal Aid:

1. **Constitutional Provision:**
    - **Article 39A:** Mandates the **State** to provide **free legal aid** to ensure that justice is accessible, regardless of a person's financial capacity or other limitations.
2. **Legal Services Authorities Act, 1987:**
    - **Framework for Legal Aid:** Establishes **Legal Services Authorities** at **National, State, District, and Taluka** levels and **Legal Services Committees** in the Supreme Court, High Courts, District Courts, and Taluka Courts.

Eligibility for Legal Aid under the Act:

Free legal aid is available to:

- **Women or children**
- **Scheduled Castes and Scheduled Tribes members**
- **Industrial workmen**
- **Persons with disabilities**
- **Victims of trafficking, forced labor, or beggary**
- **Victims of disasters or violent events**
- **Persons in custody**, including those in protective homes, juvenile homes, or psychiatric facilities

GS Paper 3 – Environment and Ecology

6 India's First Great Indian Bustard Hatched via Artificial Insemination


Context: In a historic development, **India's first Great Indian Bustard (GIB)** has been successfully hatched through artificial insemination at the **National Breeding Centre in Jaisalmer, Rajasthan**, as part of the **Bustard Recovery Program**.

Bustard Recovery Project:

- **Launch and Duration:** Initiated in **2016** for five years, extended from **2021 to 2024**.
- **Objectives:**
  - **Conservation Breeding**: To increase GIB populations through controlled breeding.
  - **Capacity Building and Advocacy**: To raise awareness among stakeholders on bustard conservation.
  - **Promote Bustard-Friendly Land Use**: Encourage conservation practices in land management.

About the Great Indian Bustard (GIB):

- **Also Known As**: Locally called **Godawan** in Rajasthan.
- **Habitat**: Primarily found in **Rajasthan and Gujarat**; smaller populations are present in **Maharashtra, Karnataka, and Andhra Pradesh**.
- **Conservation Status**:
  - **IUCN Red List**: Critically Endangered.
  - **Wildlife Protection Act, 1972**: Listed in **Schedule I** and **CITES Appendix I**.
  - **Population**: Fewer than **150 individuals** remain, mostly restricted to India.

Characteristics and behaviour:

- **Species Type**: **Grassland** bird, endemic to the Indian subcontinent.
- **Distinctive Traits**:
  - Has a **black crown** on its forehead; males have larger black crowns.
  - Males use a **gular pouch** to produce a low humming sound to attract females.
- **Diet**: Omnivorous; feeds on grass seeds, insects like grasshoppers, beetles, and occasionally small rodents and reptiles.

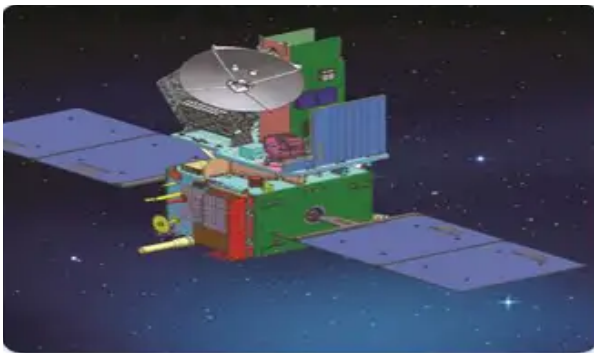
Major Threats:

- **Hunting**: Once widely hunted, now illegal but remains a historic cause of decline.
- **Habitat Loss**: Grasslands are increasingly converted for agriculture and development.
- **Collision with Power Lines**: Power infrastructure in bustard habitats has led to frequent collisions.
- **Agricultural Expansion**: Fragmentation of habitats due to large-scale agriculture.

This successful artificial insemination milestone offers a critical boost to conservation efforts, helping protect this **Critically Endangered** species from extinction.

GS Paper 3– Disaster Management and Environmental Issues

7 EOS-06 and INSAT-3DR Satellites



Context: The **Indian Space Research Organisation (ISRO)** is actively tracking **Cyclonic Storm 'Dana'**, which is advancing toward the coastal regions of **Odisha** and **West Bengal**. Utilizing its advanced satellites, **EOS-06** and **INSAT-3DR**, ISRO has been monitoring the storm's development. The data provided by these satellites supports disaster management operations and enhances India's weather monitoring capabilities.

About EOS-06 (Oceansat-3):

- **Developer**: Indian Space Research Organisation (ISRO)
- **Launch Date**: November 26, 2022
- **Launch Vehicle**: Polar Satellite Launch Vehicle (PSLV-C54)
- **Purpose**: EOS-06 is designed to monitor and study various aspects of the Earth's oceans and coastal zones.
- **Key Objectives**:
    - Provide continuity of services from its predecessors, **Oceansat-1** and **Oceansat-2**.
    - Enhance payload capabilities for oceanographic and atmospheric studies.
    - Applications include ocean surface studies, coastal zone management, and marine weather forecasting.

About INSAT-3DR:

- **Developer**: Indian Space Research Organisation (ISRO)
- **Launch Date**: September 2016
- **Type**: Advanced meteorological satellite
- **Significant Features**:
    - Imaging in the middle infrared band for night-time visibility of low clouds and fog.
    - Dual thermal infrared bands for accurate Sea Surface Temperature (SST) estimation.
    - Higher spatial resolution in both visible and thermal infrared bands.
- **Purpose**: INSAT-3DR continues the service of previous meteorological missions and enhances capabilities for weather forecasting, environmental monitoring, and search and rescue operations.

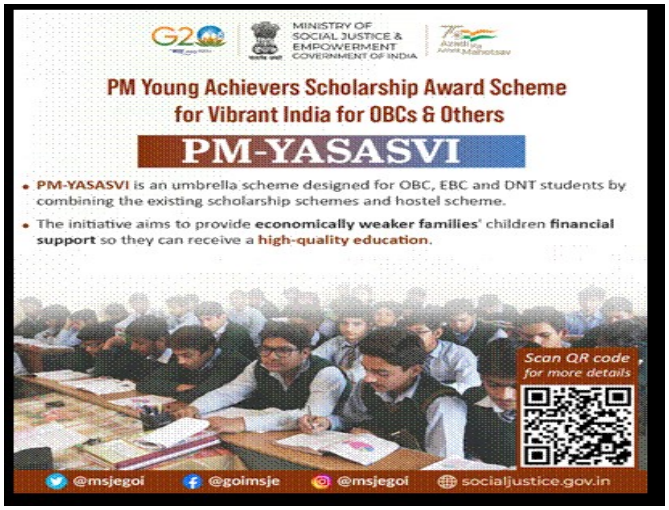
What is a Meteorological Satellite?

A **meteorological satellite** is a specialized satellite used to observe and gather data about Earth's atmospheric conditions. Key functions include:

- **Weather Forecasting**: Providing real-time data to improve the accuracy of weather predictions.
- **Climate Change Studies**: Monitoring long-term atmospheric changes related to climate patterns.
- **Environmental Monitoring**: Tracking natural disasters, pollution levels, and land use changes.

GS Paper 2 – Empowerment Programs

8 PM Young Achievers Scholarship Award Scheme (PM-YASASVI)



Context: Under the vision of **"Sabka Saath, Sabka Vikas,"** the Ministry of Social Justice and Empowerment has implemented the **PM Young Achievers Scholarship Award Scheme (PM-YASASVI)** for a Vibrant India. This comprehensive scheme aims to empower students from Other Backward Classes (OBC), Economically Backward Classes (EBC), and Denotified Tribes (DNT) by providing quality education during their early years.

Key Features of the PM-YASASVI Scheme:

Organized Initiative: This scheme integrates several previous schemes, such as:

- **Dr. Ambedkar Post-Matric Scholarship Scheme for EBC**
- **Dr. Ambedkar Pre-Matric and Post-Matric Scholarship Scheme for DNT**

By combining these schemes, an effective approach has been created to meet the educational needs of socially and economically disadvantaged students.

Objectives: The primary goal of the scheme is to promote educational empowerment, enabling these students to face financial challenges and complete their education. This initiative also contributes to individual development as well as the creation of an inclusive and equitable society.

Benefits of the Scheme: Students benefit from the following schemes:

1. **Pre-Matric Scholarship:** For classes 9 and 10.
2. **Post-Matric Scholarship:** For post-matriculation and post-secondary higher studies.
3. **Top Class Education:** Scholarships are provided for students excelling in their studies to gain admission to top-class schools and colleges.
4. **Hostel Facilities:** Hostel facilities are provided under the **"Construction Scheme for Hostels for OBC Boys and Girls."**

Five Sub-Schemes of PM-YASASVI:

1. Pre-Matric Scholarship for OBC, EBC, and DNT students.
2. Post-Matric Scholarship for OBC, EBC, and DNT students.
3. Top Class School Education for OBC, EBC, and DNT students.
4. Top Class College Education for OBC, EBC, and DNT students.
5. Construction of Hostels for OBC boys and girls.

Scope and Financial Provisions of the Scheme:

- **Pre-Matric Scholarship:** For students in classes 9 and 10, with a family annual income of less than **₹2.5 lakh**. Each student receives an annual academic allowance of ₹4,000.
    - **Financial Year 2023-24:** ₹193.83 crores allocated to benefit 19.86 lakh students.
- **Post-Matric Scholarship:** Provides academic allowances ranging from ₹5,000 to ₹20,000 for higher education.
    - **In 2023-24:** ₹988.05 crores allocated to benefit 27.97 lakh students.
- **Top Class Education:** Covers tuition, hostel expenses, and other academic costs for meritorious students.
    - For school students: Up to ₹1.25 lakh per year in financial support.
    - College education: Allocation of ₹111.18 crores for 4,762 students.
- **Hostel Construction Scheme:** To provide residential facilities for OBC students.
    - **In 2023-24:** ₹14.30 crores allocated for the construction of hostels for 1,146 students.

Key Benefits and Impact of the Scheme:

- Through educational empowerment, this scheme leads disadvantaged students toward self-reliance.
- Financial assistance allows them to continue their studies, enhancing their personal and professional potential.
- By expanding education among disadvantaged groups, this initiative also promotes equality in society.
- Moving beyond a narrow perspective, this scheme has integrated all previous scholarship initiatives to ensure a streamlined and inclusive education system.
- As a result, the educational landscape for marginalized communities has improved significantly.

Conclusion: The PM YASASVI Scheme opens educational opportunities for marginalized students lacking financial resources. This scheme not only assists students in achieving academic success but also enables them to play a meaningful role in the vision of a developed India by 2047.

GS Paper 2 – Health

9 What is E. coli?

Context: A recent report from the Centers for Disease Control and Prevention (CDC) indicated that one person died, and 49 others fell ill due to an E. coli outbreak linked to McDonald's Quarter Pounder hamburgers.

About E. coli:

- **Escherichia coli (E. coli)** is a type of bacteria found in the intestines of humans and animals.
- It is a rod-shaped bacterium belonging to the **Enterobacteriaceae** family.
- While most strains are harmless and beneficial, some can cause serious illness and infections.

Types of Illness:

- Some strains of E. coli can lead to:
  - Diarrhea
  - Urinary tract infections
  - Respiratory illnesses and pneumonia
  - Other infections

Transmission: E. coli can be transmitted to humans through:

  - Contaminated food and water
  - Contact with fecal matter from infected individuals or animals

Mechanism of Illness: The strains that cause illness produce a toxin called **Shiga**, which damages the lining of the small intestine and leads to diarrhea. These are known as **Shiga toxin-producing E. coli (STEC)**.

Symptoms of E. coli Infection:

- Common symptoms include:
  - Fever over 102°F
  - Persistent diarrhea (often bloody)
  - Vomiting
- A significant concern is dehydration due to the inability to retain fluids, and in rare cases, it can lead to acute kidney injury.

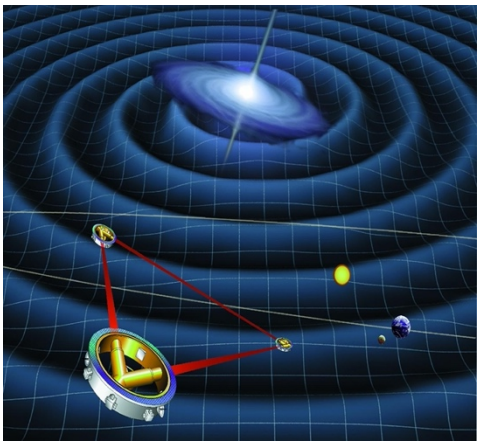
Treatment: Most E. coli infections are self-limiting and resolve without treatment. However, staying hydrated is crucial during the illness.

What is Bacteria?

- Bacteria are microscopic, single-celled prokaryotic organisms that play vital roles in ecosystems and significantly impact human health. They are ubiquitous, found in diverse environments from mountaintops to ocean trenches.

GS Paper 3 – Science and Technology

10 LISA Mission



Context: NASA recently unveiled the prototype for six telescopes that will assist LISA's three spacecraft in detecting gravitational waves in space.

About the LISA Mission:

- The **Laser Interferometer Space Antenna (LISA)** mission is a joint initiative by NASA and the European Space Agency (ESA), scheduled for launch in the mid-2030s.
- **Objective:** The mission aims to detect and study gravitational waves by deploying three spacecraft in Earth's orbit, arranged in a triangular formation with sides measuring 1.6 million miles (approximately 2.5 million kilometres).
- It will be the **first gravitational wave detector in space**, exploring the fundamental nature of gravity and black holes, as well as the rate of expansion of the Universe.

Spacecraft Configuration:

- Each of the three spacecraft will be equipped with two telescopes.
- The spacecraft will operate in a **heliocentric orbit**, about 50 million kilometres from Earth, maintaining a distance of around 2.5 million kilometres between them.
- The mission will utilize lasers to detect gravitational waves by monitoring subtle changes in distances between free-floating cubes housed within each spacecraft.
- These distances will be measured with extreme precision through **laser interferometry**.

What are Gravitational Waves?

- **Gravitational waves** are distortions in spacetime caused by energetic events involving dense objects with strong gravitational fields.
- Predicted by **Albert Einstein's theory of general relativity**, they are weak and interact minimally with matter, enabling them to travel vast cosmic distances without distortion.
- Gravitational waves leave clear signatures on the dynamics of their sources and on the local structure of spacetime.