



Balalatha's
CSB IAS ACADEMY
The Road Map to Mussoorie...

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PSLV-C62 MISSION

Context; ISRO's PSLV-C62 mission experienced an anomaly at the end of the PS3 stage, and a detailed investigation has been launched to analyze the issue

About the Mission

- It is a **multi-payload mission of the Indian Space Research Organisation (ISRO)** that carries one primary satellite and 18 secondary payloads into space.
- It is ISRO's first space launch of 2026.
- It was scheduled to lift off from Sriharikota.
- The mission's primary payload is the **earth observation satellite EOS-N1 (codenamed 'Anvesha')**, an **hyperspectral imaging satellite developed primarily for the Defence Research and Development Organisation (DRDO) for strategic purposes.**
- Unlike conventional imaging satellites, hyperspectral satellites can "see" the Earth in hundreds of wavelengths, allowing them to identify materials and objects with far greater precision.
- This capability makes EOS-N1 a **high-value asset for national security, border surveillance and strategic monitoring.**
- At the same time, the satellite will also be used for civilian applications such as agriculture planning, urban mapping, mineral detection, and environmental monitoring.

- PSLV-C62 also carries Europe's Kestrel Initial Demonstrator (KID), an experimental mission involving a small re-entry capsule developed in collaboration with a Spanish startup.
- Additionally, 17 commercial payloads from startups and research institutions across India, Mauritius, Luxembourg, the UAE, Singapore, Europe, and the United States are manifested for the PSLV-C62 Mission.
- Several Indian startups and academic institutions are also flying their satellites.
 - These include OrbitAID Aerospace's AayulSAT, CV Raman Global University's CGUSAT-1, Dhruva Space's DA-1, Space Kidz India's SR-2, Assam Don Bosco University's Lachit-1, Akshath Aerospace's Solaras-S4, and Dayanand Sagar University's DSAT-1.
- Bengaluru-based **OrbitAID Aerospace's AayulSAT** stands out as a historic first.
 - It is India's maiden on-orbit satellite refueling payload.
 - The mission aims to demonstrate technologies that could extend the operational life of satellites by enabling in-orbit servicing and refueling.
 - Such capabilities are seen as crucial for tackling space debris and improving sustainability in Earth's increasingly crowded orbital environment.

ISRO's Primary Launch Vehicles

PSLV (Polar Satellite Launch Vehicle)

- **Purpose:** Earth observation, remote sensing, smaller satellites.
- **Orbits:** LEO (Low Earth Orbit), Polar, Sun-Synchronous.
- **Stages:** Four-stage, solid & liquid fuels.
- **Payload:** Lighter (e.g., 1.75 tonnes to SSPO in XL variant).
- **Nickname:** "Workhorse".

GSLV (Geosynchronous Satellite Launch Vehicle) Mk II

- **Purpose:** Heavier communication satellites.
- **Orbits:** Geosynchronous Transfer Orbit (GTO).
- **Stages:** Three stages, uses indigenous Cryogenic Upper Stage (CUS).
- **Payload:** Medium (e.g., 2.25 tonnes to GTO).

LVM-3 (Launch Vehicle Mark-3 / Formerly GSLV Mk III)

- **Purpose:** Heaviest missions, including human spaceflight, deep space.
- **Orbits:** LEO, GTO, MEO, lunar/solar missions.
- **Stages:** Three stages (solid boosters, liquid core, cryogenic upper stage).
- **Payload:** Heavy (e.g., 8 tonnes to LEO, 4 tonnes to GTO).
- **Nickname:** "Bahubali".

Source; PSLV-C62/EOS-N1 Mission encounters anomaly during end of PS3 stage—The Hindu

SCHEMES IN NEWS

Pradhan Mantri-Rastriya Krishi Vikas Yojana



- It is a Centrally Sponsored Schemes (CSS) operating under the Ministry of Agriculture and Farmers Welfare.
- It is aimed at accelerating agricultural growth and improving farmers' income.

Objectives

- To encourage states to increase public investment in agriculture and allied sectors.
- To enhance agricultural productivity and overall farm growth.
- To strengthen agricultural and post-harvest infrastructure and reduce losses.
- To promote diversification into high-value crops, horticulture, livestock, and fisheries.
- To encourage adoption of modern, innovative, and climate-resilient farming practices.
- To reduce regional disparities in agricultural development.

Features

- **State-Led and Decentralized Approach:** States have the flexibility to plan and

implement agricultural projects according to local priorities.

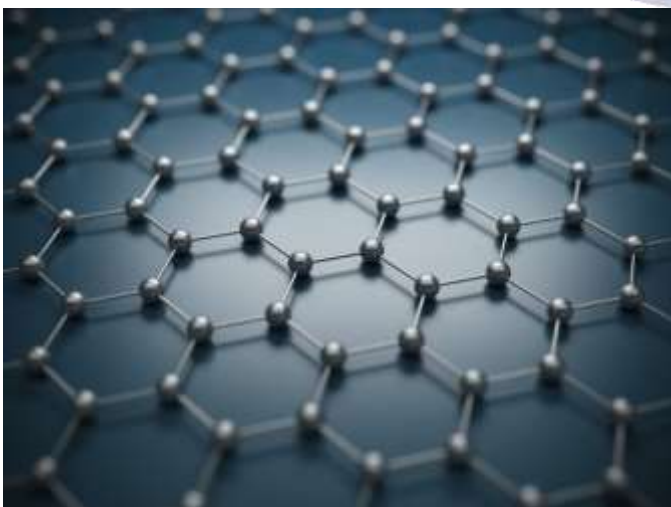
- **Growth-Oriented Scheme:** The scheme aims to achieve a sustained annual growth rate of around 4 percent in agriculture and allied sectors.
- **Wide Sectoral Coverage:** It supports crop production, horticulture, livestock, fisheries, organic farming, agricultural research, and marketing infrastructure.
- **Incentive-Based Funding:** States receive financial assistance based on their commitment to increasing public investment in agriculture.

Funding Pattern

- **General States:** 60 percent Centre and 40 percent State
- **North-Eastern and Hilly States:** 90 percent Centre and 10 percent State
- **Union Territories:** 100 percent central funding.

TERMS IN NEWS

Graphene



- It is an **allotrope of carbon, along with diamond and graphite.**
- It is a **two-dimensional material** consisting of a single layer of carbon atoms arranged in a honeycomb structure.
- The **stacked form of graphene is graphite.**
- Graphene was first isolated in 2004. Since then, graphene has found hundreds of innovative applications, from sensors and electronics to energy storage and healthcare.

Properties of Graphene

- **Thickness:** Graphene is the world's thinnest material – it is only one atom thick, one million times thinner than a human hair.
- **Strength:** It is 200 times stronger than steel but six times lighter.
- **Flexibility:** It is extremely flexible and stretchable.
- **Conductivity:** It is an excellent electrical and thermal conductor.
- **Transparency:** It is almost perfectly transparent since it only absorbs 2% of light.
- It is impermeable to gases, even those as light as hydrogen or helium

Charophytes



- Charophytes are a type of **green algae**.
- Fossils of Charophytes have been found going back to the Silurian Period (443 million years ago).
- This was the period when plants moved from water to land—and **Charophytes are considered the closest living relatives to land plants**.
- **Habitat:** Charophytes grow in silt, mud, peat or sand, often as the first plants to colonize newly-cleared areas.
- **Distribution:** These “plants” are found on all continents except Antarctica.

Features of Charophyte

- They have no true leaves, stems nor fruits.
- These are generally submergent and are loosely attached to the sediment by thin rhizome- like structures called ‘holdfasts’.
- Seeds can remain dormant for years.
- Charophytes have been found in water as deep as 213 feet.
- They are unable to grow or are restricted in growth in turbid or murky waters.

Benefits of Charophyte

- Charophytes are **underwater plants that play a crucial role in the water quality and biodiversity of lakes**;
- They stabilize the lake bed, produce oxygen, promote water clarity, and provide habitat for numerous aquatic organisms.

PLACES IN NEWS

Syria



- **Location:** It is located on the east coast of the Mediterranean Sea in southwestern Asia.
- **Bordering Countries:** It is bordered by Turkey in the north, Lebanon in the west, Iraq in the east, Jordan in the south and Israel in the southwest.
- **Capital City:** Damascus

Geographical Features of Syria

- Syria's geography offers two major regions, a western and an eastern part.
- The western region features narrow, fertile coastal plains along the eastern Mediterranean Sea.
- The eastern part of the country is the realm of the Syrian Desert which is a mixture of dry steppe and true desert landscape.
- **Rivers:** Euphrates River flows across Syria before entering Iraq.

- **Lakes:** Lake al-Assad (a man-made reservoir,) created by a dam on the Euphrates River.
- **Desert:** Southern and eastern Syria are part of the northern Syrian Desert.
- **Highest Point:** Mt Hermon (2,814 m).

Political History

- **Hafez al-Assad (1971–2000):** Seized power in a 1970 coup and established a hereditary, authoritarian Ba'athist regime. His rule was marked by the brutal suppression of the 1982 Hama uprising.
- **Bashar al-Assad (2000–2024):** Succeeded his father and initially signaled reform, but ultimately maintained iron-fisted control through a totalitarian police state.
- **2011:** Peaceful **Arab Spring** protests against the Assad family's 40-year rule were met with military force, sparking an armed uprising.
- **2012–2024:** A brutal **Civil War** ensued, killing over 600,000 and displacing millions as the conflict drew in global powers and extremist factions.
- **Dec 2024:** The **Dictator**, Bashar al-Assad, fled to Russia after a lightning rebel offensive ended his regime.
- **2025–2026:** A **new government** led by Ahmed al-Sharaa took power under a transitional constitution, though it currently faces 2026 clashes with Kurdish forces and a severe humanitarian crisis.

Cuba



- **Location:** An archipelago in the northern Caribbean Sea, situated at the confluence of the Gulf of Mexico and the Atlantic Ocean.
- **Neighbors:** Located 150 km south of **Key West, Florida** (USA), east of Mexico, and north of Jamaica. Its eastern neighbor across the Windward Passage is Haiti.
- **Features:** Dominated by fertile lowland plains (two-thirds of the island) used for farming, with three major mountain ranges: the Sierra de los Órganos (west), Escambray (central), and Sierra Maestra (southeast).
- **Key Sites:** **Havana** (Capital), Cauto River (longest), Lake Leonero (natural), and **Pico Turquino** (highest point at 1,974m).

Political History & Conflict

- **Fulgencio Batista (1933–1959):** Dominated politics as a military leader and later as a U.S.-backed dictator. His regime was marked by corruption and the suppression of civil liberties.

- **The Revolution (1953–1959):** An armed uprising led by the 26th of July Movement. It utilized guerrilla warfare from the Sierra Maestra mountains to eventually collapse the Batista government on January 1, 1959.
- **Fidel & Raúl Castro (1959–2021):** Fidel led the Cuban Revolution to oust Batista in 1959, establishing a one-party socialist state. Raúl succeeded him in 2008, initiating modest reforms before stepping down in 2021.
- **The Cold War & Embargo:** Since 1961, Cuba has been under a U.S. trade embargo. The 1962 Cuban Missile Crisis brought the country to the center of global nuclear tension.
- **Modern Transition (2018–2026):** Miguel Díaz-Canel became president in 2018, marking the formal end of Castro-family leadership, though the Communist Party remains the sole legal authority.

PRACTICE QUESTIONS

Q1; Consider the following statements regarding PSLV (Polar Satellite Launch Vehicle)

1. is an expendable medium-lift launch vehicle designed and operated by ISRO.
2. It was developed to allow India to launch its Indian Remote Sensing satellites into Sun-synchronous orbits
3. It uses an indigenous cryogenic engine

How many of the above statements are incorrect

- A. Only One
- B. Only Two
- C. All of the Above
- D. None of the Above

Q2; Consider the following statements regarding graphene

1. It is an allotrope of carbon, along with diamond and graphite.
2. It is a two-dimensional material consisting of a single layer of carbon atoms arranged in a honeycomb structure.
3. It is 200 times stronger than steel but six times lighter.

How many of the above statements are incorrect

- A. Only One
- B. Only Two
- C. All of the Above
- D. None of the Above

Q3; The term Charophytes, recently seen in the news denote which of the following

- A. Underwater Algae
- B. Floating Seaweed
- C. Tropical Climbers
- D. Tundra Lichens

Q4; Which among the following countries are located in the Levant Region

- A. Syria
- B. Morocco
- C. Venezuela
- D. Cuba

Q5; This country in the Caribbean region was ruled by an army dictator till 1959, later the communist forces captured power leading to an authoritarian rule until today. It was one among the flashpoints of the Cold War, especially in relation to a missile crisis.

Identify the country from the given description

- A. Haiti
- B. Guyana
- C. Belize
- D. Cuba

Answers

- 1. A
- 2. D
- 3. A
- 4. A
- 5. D

