

WHAT IS ISRO'S 'ZERO ORBITAL DEBRIS' MILESTONE?

Why in News? ISRO has said its PSLV-C58/XPoSat mission has practically left zero debris in earth's orbit.

How was this Made Possible? According to the ISRO, the last/ 4th stage of the PSLV used in the mission was transformed into a kind of orbital station - PSLV Orbital Experimental Module-3 (POEM-3).

What is POEM? Developed by the Vikram Sarabhai Space Centre (VSSC) as an inexpensive space platform, **POEM uses the spent 4th stage of a PSLV rocket as an orbital platform.** POEM was used for the first time in the PSLV-C53 mission in **2022** as a stabilised platform to conduct in-orbit scientific experiments with a variety of payloads.

What has POEM-3 Achieved? ISRO's PSLV C-58 mission (launched in 2024) successfully deployed the XPoSat satellite in its desired orbit of 650 km. The 4th stage of the PSLV/ POEM-3 was **lowered to a 350-km high circular orbit.** After all of POEM-3's payload objectives were completed, it re-entered the earth's atmosphere.

Is there any International Law Pertaining to Space Debris? Currently, there are **no international space laws pertaining to LEO debris.** However, most space-exploring nations abide by **the Space Debris Mitigation Guidelines 2002** (endorsed by the UN in 2007).

How are Space Agencies Dealing with Debris? NASA had instituted its Orbital Debris Program in 1979 and the **European Space Agency (ESA)** has adopted a '**Zero Debris charter**' and called for **zero space debris by 2030.** **Japan** has launched the Commercial Removal of Debris Demonstration (CRD2) to tackle space junk. **An Indian start-up** named **Manastu Space** is working on technologies like in-space refuelling, de-orbiting of old satellites, and satellite life extension.

What is a Partnership Firm?

Recently, the Supreme Court held that the legal heirs of a deceased partner do not become liable for any liability of the partnership firm upon the death of the partner.



About Partnership Firm:

- A partnership firm is a **business entity** where two or more **individuals come together** to manage and operate a business.
- The partners **pool their resources, knowledge, and skills** to achieve **common business goals**.
- It is a **widely preferred** form of business, primarily due to its simplicity and **ease of formation**.
- The partnership business includes any kind of trade, occupation, and profession.
- A partnership consists of **three essential elements**.
 - A partnership **must be the result of an agreement** between **two or more individuals**.
 - The agreement must be built **to share the profits** obtained from the business.
 - The business **must be run by all or any of them** representing the rest.
- All these conditions must coexist before a partnership can come into existence.
- **Indian Partnership Act, 1932:**
 - A partnership firm in India is governed and regulated by the Indian Partnership Act, 1932.
 - The Act **defines partnership as a profit-sharing relation** between two or more partners.
 - The duties and responsibilities of the partners, along with profit sharing, are **defined in** an agreement or deed known as **Partnership Agreement**.
- There are **mainly three types of partnerships**, which are as follows:
- **General Partnership:**
 - In a general partnership, all the **partners hold equal rights** and **participate in the decision-making** and management of the firm.

- The general partner **puts his capital, skills, and labor** to achieve the firm's financial goals.
 - In a general partnership, **a partner has unlimited liability** and has the **right to take decisions** regarding the management and operations of the firm.
 - **Partnership at will:**
 - Section 7 of the Indian Partnership Act, 1932, defines partnership at will as **when there is no provision** made between the partners **for the duration of their partnership**, or for the determination of their partnership.
 - There are **two essential conditions** for partnership at will, which are as follows:
 - There is **no fixed period for the partnership** to exist
 - There is **no determination of the partnership**.
 - **Particular partnership:**
 - A particular partnership is formed to **manage and run a particular business** or venture.
 - **When the particular purpose is served, the partnership can be dissolved.**
 - However, the partners can continue with the said partnership by making an agreement.
 - If there is no agreement, the particular partnership is dissolved.
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WHAT IS TSAT-1A?

Tata Advanced Systems Limited (TASL) recently announced the successful deployment in space of its sub-metre resolution optical satellite, TSAT-1A, by SpaceX's Falcon 9 rocket.

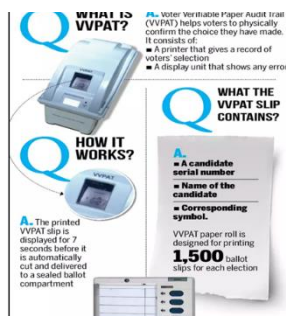


About TSAT-1A:

- It is an optical sub-metre-resolution **Earth observation satellite**.
- It was built by **Tata Advanced Systems Limited (TASL)** in **collaboration with** Latin American company **Satellogic Inc**, following a collaboration agreement between the two companies in late 2023.

- TSAT-1A was assembled in TASL's Assembly, Integration, and Testing (AIT) plant at its Vemagal facility in Karnataka.
- It was **launched by SpaceX's Falcon 9 rocket** from the Kennedy Space Center, Florida, in the US.
- **Features:**
 - TSAT-1A's core strength lies in its ability to **capture military grade imagery** of Earth's surface with **sub-meter resolution**.
 - It is equipped with both **multispectral and hyperspectral imaging capabilities**. This technology allows TSAT-1A to collect data across a wide range of wavelengths within the electromagnetic spectrum, providing a deeper and more nuanced understanding of land, water, and various natural resources.
 - TSAT-1A boasts **greater collection capacity**, a wider **dynamic range** (the ability to capture detail in both very bright and very dark areas), and **low-latency** delivery of data.
- This satellite will be **used by Indian defense forces to gather discreet information**, and this information will be **shared with friendly nations**.
- It can enable defence forces to enhance their preparedness, response capabilities, and strategic decision-making.
- While India has a few military spy satellites built by ISRO, this is the **first such initiative in the private sector**.

WHY VVPAT WAS INTRODUCED IN INDIAN ELECTIONS



What is a VVPAT Machine? How does it Work?

- The VVPAT machine is attached to the ballot unit of the EVM and provides visual verification for the vote cast by a voter by printing a slip of paper with the voter's choice on it.
- This slip of paper, containing the candidate's serial number,

name, and party symbol, is displayed in the machine behind a glass window. The voter is given seven seconds to verify her vote.

- Following this, the slip falls into a compartment underneath.
- **No voter can take the VVPAT slip back home, as it is later used to verify votes cast in five randomly selected polling booths.**
- The idea is that by allowing for a physical verification of the electronically cast vote, both voters and political parties have greater faith in the process — that their vote is being recorded correctly.

Why did the Election Commission Introduce VVPATs?

- The idea of the VVPAT machine first emerged in 2010, when the Election Commission of India (EC), held a meeting with political parties to discuss how to make the EVM-based polling process more transparent.
- After a prototype was prepared, field trials were held in Ladakh, Thiruvananthapuram, Cherrapunjee, East Delhi, and Jaisalmer in July 2011.
- **The VVPAT was used for the first time in all 21 polling stations of the Noksen Assembly constituency of Nagaland in 2013, after which the EC decided to introduce VVPATs in a phased manner.**
- By 2017, there was 100% adoption of VVPATs.

Why are Political Parties demanding Widened Verification of VVPAT Slips?

- Opposition parties continue to call for verification of more polling booths to make voting more transparent.
- They argue that the sanctity of a fair election outweighs the concern of delay in the declaration of results.
- Parties have called for anything from 50% to 100% verification of VVPAT slips.
- However, the EC has, thus far, been reluctant to do so. As per EC sources, the EVM and VVPAT concerns have been litigated and addressed by the Commission many times.

LAVENDER CULTIVATION

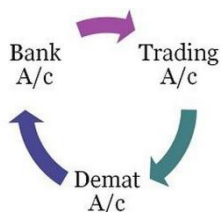


According to officials, more than 700 acres of farmland has been brought under lavender cultivation in the Jammu and Kashmir area since 2017, and another 100 acres is set to be added.

Lavender Cultivation is a crop **native to Europe** but was introduced in the temperate regions of Jammu & Kashmir state by the CSIR Aroma Mission.

- It is a small, **perennial aromatic herb shrub** used in the fragrance, specialty food, and alternative medicine industries.
- Propagation of lavender can be done by **seeds, rooted cuttings, tissue culture, and layering.**
- **Required climatic conditions**
 - **Soil:** It can grow well in light well-aerated soil rich with organic matter. It grows best in **neutral to alkaline soil** which is free draining. This crop is very sensitive to waterlogging however can go well with poor or eroded soil.
 - **Rainfall:** It can produce well with an annual rainfall **range from 300 to 1400 mm** per year.
 - **Climate:** It is a **hard and temperate plant** that can tolerate drought and frost conditions. The ideal climatic conditions are **cool winters and cool summers.** It requires a good amount of sunlight.
 - It can be grown in areas that experience **snowfall and have a hilly terrain.**
- **Applications:** Food and flavouring, pharmaceutical and therapeutic, cosmetic, and industrial purposes etc.

BANK ACCOUNT VS DEMAT ACCOUNT



A demat account and a bank account serve different purposes and have **distinct features** and each serves its distinct purpose in the overall financial ecosystem.

About Bank account Vs Demat account:

- **Bank account**
 - **Purpose:** A bank account is used for storing and managing money. It facilitates various financial transactions such as deposits, withdrawals, transfers, bill payments, and online transactions.
 - **Types of Assets Held:** It holds funds in the form of **cash**, which can be deposited, withdrawn, or transferred as required. Some bank accounts may also hold fixed deposits, savings certificates, or other financial products offered by the bank.
 - **Regulatory Authority:** Bank accounts are regulated by banking regulators such as the Reserve Bank of India (RBI) in India.
 - **Transactions:** It involves deposits, withdrawals, transfers, and payments. Customers can use various channels such as ATMs, online banking, mobile banking, and cheques to conduct banking transactions.
 - **Interest and Returns:** Bank accounts **may earn interest** on the funds deposited, depending on the type of account and prevailing interest rates. Some bank accounts also offer rewards or cashback on transactions.
- **Demat account:** It serves as a secure digital vault for holding various securities. It stores securities in electronic format, a process known as dematerialisation, effectively converting physical shares into digital assets.
 - **Purpose:** A demat account is primarily used for holding and trading securities such as stocks, bonds, mutual funds, and Exchange-Traded Funds (ETFs) in electronic form. It allows investors to buy, sell, and transfer securities seamlessly.
 - **Types of Assets Held:** Securities held in a demat account are **in electronic or digital form**. These include stocks, bonds, debentures, mutual fund units, government securities, and other financial instruments.
 - **Regulatory Authority:** These are regulated by securities market regulators such as the **Securities and Exchange Board of India (SEBI)** in India. Depositories

like the National Securities Depository Limited (NSDL) and Central Depository Services Limited (CDSL) oversee the functioning of demat accounts.

- **Transactions:** It involves buying, selling, and transferring securities. Investors can trade securities on stock exchanges through their demat accounts.
 - **Interest and Returns:** Demat accounts **do not generate interest** or returns on the securities held in the account. Returns are generated based on the performance of the securities held.
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BE PREPARED FOR BLACK SWAN EVENTS – ARMY CHIEF

Why in news?

In an address at the Defence Services Staff College in Wellington, Army Chief Gen Manoj Pande on Monday called upon the force to be always prepared for ‘black swan’ events.

Black swan event

- A black swan is a rare, unpredictable event that comes as a surprise and has a significant impact on society or the world.
- These events are said to have three distinguishing characteristics:
 - they are extremely rare and outside the realm of regular expectations;
 - they have a severe impact after they hit; and
 - they seem probable in hindsight when plausible explanations appear.
- **Origin**
 - The black swan theory was put forward by author and investor Nassim Nicholas Taleb in 2001, and later popularised in his 2007 book – The Black Swan: The Impact of the Highly Improbable.
- **Implications of Black Swan events**
 - **Disruption**
 - Black Swan events can disrupt economies, industries, and societies on a large scale.

- They can cause sudden and unexpected changes in financial markets, business operations, and everyday life.
 - **Uncertainty**
 - These events introduce high levels of uncertainty because they are difficult or impossible to predict using conventional methods.
 - This uncertainty can make planning and decision-making challenging for individuals, organizations, and governments.
 - **Vulnerability**
 - Black Swan events often reveal vulnerabilities in systems that were previously thought to be robust or resilient.
 - They expose weaknesses in risk management practices and highlight the need for greater preparedness and resilience.
 - **Reassessment of Risk**
 - After a Black Swan event occurs, there is often a reassessment of risk across various domains.
 - People and organizations may become more aware of previously overlooked risks and take steps to mitigate them in the future.
 - **Regulatory and Policy Responses**
 - In response to Black Swan events, governments and regulatory bodies may introduce new regulations or policies aimed at preventing similar events in the future or mitigating their impact.
 - **Behavioral and attitude Changes**
 - As people and organizations adapt to the new reality. This may include changes in consumer behavior, investment strategies, and risk management practices.
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