



## New POEM Platform

### Why in news?

Recently, the [Indian Space Research Organisation \(ISRO\)](#) achieved the feat of successfully launching the **PSLV Orbital Experimental Module or 'POEM'**.

- Besides this achievement, **ISRO also launched three satellites from Singapore on the PSLV-C53.**
  - This was the second [Polar Satellite Launch Vehicle\(PSLV\) mission of the year](#). In February 2022, ISRO launched PSLV-C52 with the [Earth observation satellite EOS-04](#) and two smaller satellites.
- This was the second **dedicated commercial mission of NewSpace India Limited (NSIL)**, the commercial arm of ISRO.

### Which were the Singaporean Satellites?

- **DS-EO: It carries an electro-optic, multispectral payload to provide full-color images for land classification and serve humanitarian assistance, and disaster relief needs.**
- **NeuSAR - It is Singapore's first small commercial satellite** carrying a SAR (synthetic aperture radar) payload, which is capable of providing images day and night and under all weather conditions.
- **SCOOB-I satellites - It is the first in the Student Satellite Series (S3-I)**, a hands-on student training program from the Satellite Research Centre (SaRC) at Singapore's NTU School of Electrical and Electronic Engineering.

### What are the Key Highlights of POEM?

- **POEM (PSLV Orbital Experimental Module)** is an experimental mission by ISRO which performs **in-orbit scientific experiments** during the fourth stage of the Polar Satellite Launch Vehicle (PSLV) launch vehicle as an orbital platform.
  - The PSLV is a **four-stage rocket where the first three spent stages fall back into the ocean**, and the final stage (PS4) — after launching the satellite into orbit — ends up as space junk.
  - However, in PSLV-C53 mission, the spent final stage will be **utilised as a “stabilised platform” to perform experiments.**
- It is the first time that the (fourth stage) PS4 stage would **orbit the earth as a stabilized platform.**
- POEM has a dedicated **Navigation Guidance and Control (NGC)** system for attitude stabilization, which stands for controlling the orientation of any aerospace vehicle within permitted limits. The **NGC will act as the platform's brain to stabilize it with specified accuracy.**

### What Does it Carry?

- POEM carries six payloads including two from **Indian Space Start-ups, Digantara, and Dhruva**

Space enabled through [IN-SPACE](#) and [NSIL](#).

- POEM will derive its power from **solar panels** mounted around the PS4 tank, and a **Li-Ion battery**. It will **navigate using Four Sun Sensors, a Magnetometer, Gyros & NavIC**.
- It also carries dedicated control thrusters using Helium gas storage. It is enabled with a telecommand feature.

### UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. With reference to India's satellite launch vehicles, consider the following statements: (2018)**

1. PSLVs launch satellites useful for Earth resources monitoring whereas GSLVs are designed mainly to launch communication satellites.
2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location on Earth.
3. GSLV Mk III is a four-staged launch vehicle with the first and third stages using solid rocket motors; and the second and fourth stages using liquid rocket engines.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3
- (c) 1 and 2
- (d) 3 only

**Ans: (a)**

**Exp:**

- **PSLV** is the third generation launch vehicle of India. It is the first Indian launch vehicle to be equipped with liquid stages. It is used mainly for delivering various satellites in Low Earth Orbits, particularly the Indian Remote Sensing series of satellites. It can take up to 1,750 kg of payload to Sun-Synchronous Polar Orbits of 600 km altitude.
- **GSLV** is designed mainly to deliver Indian National Satellite System, or INSAT, which is a series of multipurpose geo-stationary satellites launched by ISRO to fulfil the needs of telecommunications, broadcasting, meteorology, and search and rescue operations. It places satellites to the highly elliptical Geosynchronous Transfer Orbit (GTO). Hence, statement 1 is correct.
- The satellites in the geosynchronous orbits appear to remain permanently fixed in the same position in the sky. Hence, statement 2 is not correct.
- GSLV-Mk III is a fourth generation, three stage launch vehicle with four liquid strap-ons. The indigenously developed Cryogenic Upper Stage (CUS), which is flight proven, forms the third stage of GSLV Mk III. It is capable to lift 4-5 tonne satellites into Geosynchronous Transfer Orbit (GTO). The rocket has three stages with two solid motor strap-ons (S200), a liquid propellant core stage (L110) and a cryogenic stage (C-25). Hence, statement 3 is not correct. Therefore, option (a) is the correct answer.

**Source: IE**