XPoSat

Why in News?

Recently, the chairman of the **Indian Space Research Organisation (ISRO),** **S Somanath,** addressed students and scientists during the '**User Meet of XPoSat**' at the **ISRO headquarters in Bengaluru.**

- He emphasised the importance of effectively utilizing data from **science-based space missions** and encouraged Indian scientific institutions to identify talented students and motivate them to work with emerging data technologies like **XPoSat.**

What is XPoSat?

- **About:**
  - XPoSat stands for **X-ray** Polarimeter Satellite.
    - It is India's **pioneering polarimetry mission** aimed at studying **various dynamics of astronomical sources in extreme conditions.**
    - It is only the **world's second polarimetry mission** using X-Ray after **NASA's Imaging X-ray Polarimetry Explorer (IXPE)** that was launched in 2021.
- XPoSat is a collaboration between the **ISRO** and the **Raman Research Institute (RRI), Bengaluru, Karnataka.**

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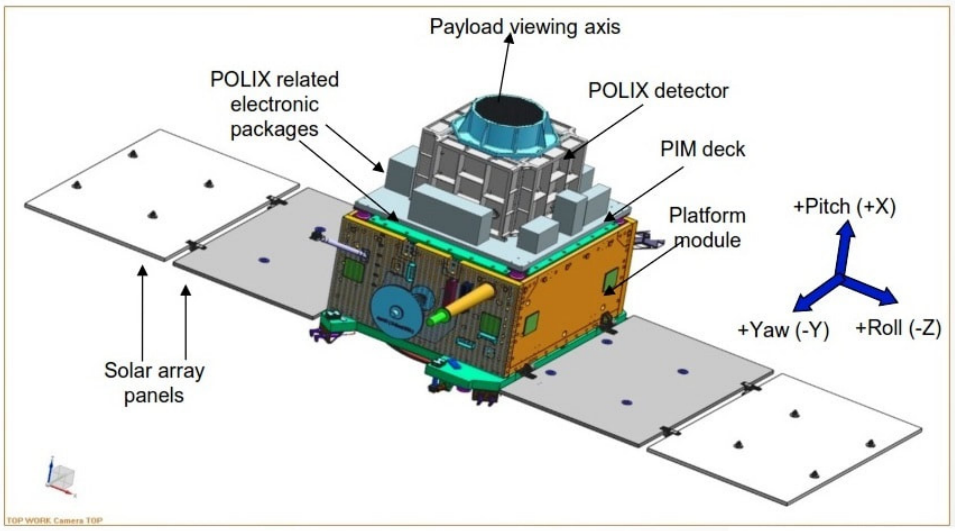

- **Scientific Payloads of XPoSat:**
  - XPoSat will carry two scientific payloads: **Polarimeter Instrument in X-rays (POLIX)** and **X-ray Spectroscopy and Timing (SPECT) in a low Earth orbit.**
    - POLIX payload will enable the measurement of polarimetry parameters such as the **degree and angle of polarization** in the medium X-ray energy range of 8-30 keV photons originating from astronomical sources.
    - SPECT payload will **provide valuable timing and spectroscopic information** within the energy range of 0.8-15 keV of X-ray photons.

- **Importance in Understanding Astronomical Sources:**
  - Polarimetry measurements offer an excellent diagnostic tool for comprehending the emission processes from various astronomical sources.
    - Astronomical sources, including **black holes, neutron stars, active galactic nuclei,** and **pulsar wind nebulae**, present complex emission mechanisms that challenge the current understanding.
  - By **combining** polarimetric observations with **spectroscopic and timing measurements,** researchers a**nticipate overcoming the limitations of the present understanding of astronomical emission processes.**
- **Status of XPoSat:**
  - Testing for XPoSat is nearing completion, and the mission is in its advanced stages and is scheduled to be launched sometime in the year 2023.

Other Upcoming Missions of ISRO:

- **Aditya-L1:**
  - India's first dedicated solar observatory mission, scheduled for June-July 2023
- **Chandrayaan-3:**
  - A follow-up mission to Chandrayaan-2, scheduled for June 2023.
- **Shukrayaan-1:**
  - India's first orbiter mission to Venus.
- **Gaganyaan Mission:**
  - A manned space mission that will put astronauts 400km in orbit.
- **NISAR:**
  - A joint Earth-observing mission between **ISRO and** NASA that will provide information on global environmental changes.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Which of the following pairs is/are correctly matched? (2014)

Spacecraft Purpose

1. Cassini-Huygens Orbiting the Venus and transmitting data to the Earth
2. Messenger Mapping and investigating the Mercury
3. Voyager 1 and 2 Exploring the outer solar system

Select the correct answer using the code given below:

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

Ans: (b)

Source: IE