ISRO Launches EMISAT Satellite

The Indian Space Research Organisation (ISRO) has launched the **EMISAT satellite on onboard the PSLV-C45** from the Satish Dhawan Space Centre in Sriharikota, Andhra Pradesh.

- The Polar Satellite Launch Vehicle (PSLV) was also carrying 28 international nanosatellites — 24 from the US, two from Lithuania and one each from Spain and Switzerland.
- **The flight of PSLV was also the longest mission of the PSLV, lasting around three hours.**

EMISAT Satellite

- The EMISAT satellite is aimed at **electromagnetic spectrum measurement.**
- It is an electronic intelligence satellite for the **Defence Research and Development Organisation (DRDO).**
- **About Satellite**
    - **Mass**: 436 kg
    - **Manufacturer**: ISRO
    - **Orbit Type**: Sun-synchronous Polar orbit(SSPO)
    - **Altitude**: About 753 km.

Polar Orbit

- **A polar orbit travels north-south** over the poles and takes approximately 90 minutes for a full revolution.
- These orbits have an inclination near 90 degrees. This allows the satellite to see virtually every part of the Earth as the Earth rotates underneath it.
- An orbit is called sun-synchronous when the angle between the line joining the center of the Earth and the satellite and the Sun is constant throughout the orbit.]

Purpose of Satellite

- EMISAT is an **all weather and all terrain condition satellite,** which will allow it to work through clouds, rain, forest and coastal areas.
- **EMISAT is an ELINT (Electronic Intelligence) satellite,** which means it will have a radar to measure the electromagnetic spectrum - **so as to intercept and analyze radar signals, find their location, identify the hostile radars based on their radio frequency (RF) signature.**
- This will be a vital tool for India when EMISAT along with the Airborne Warning and Control System (AWACS) can effectively locate, tackle and silence enemy radars, and **secure Indian airspace.**

Significance of Launch

- This mission was significant as this was the **first time a PSLV has placed objects in three different orbits.**
- The fourth stage was restarted and stopped twice to bring PSLV to the altitude of 507 km after EMISAT launch.
- At the fourth stage three experimental payloads were deployed:
    - **Automatic Identification System (AIS)** for Maritime satellite applications capturing messages transmitted from ships
    - **Automatic Packet Repeating System (APRS)** from AMSAT (Radio Amateur Satellite Corporation), India - assists amateur radio operators in tracking and monitoring position data
    - **Advanced Retarding Potential Analyzer for Ionospheric Studies (ARIS)** from Indian Institute of Space Science and Technology (IIST) - for the structural and compositional studies of the ionosphere.
- This is the first time it has been envisaged to provide a microgravity environment for research organizations and academic institutes to perform experiments.