Gaganyaan G1 mission

Why in News?

The Indian Space Research Organisation (ISRO) began the 'stacking,' or assembly, of HLVM3 at the Satish Dhawan Space Centre, Sriharikota.

- It is the *1st of 3 un-crewed test missions* that will lead up to India's maiden human spaceflight.
- **Aim** – To mimic - end to end - the actual flight and *validate critical technologies and capabilities* including the Human-rated Launch Vehicle Mark-3 (HLVM3).
- **Activity** – It will *place the orbital module* in a 170 km x 430 km elliptical orbit around the earth.
- Once the orbital module de-orbits, the *crew module will separate for controlled re-entry* into the earth's atmosphere and splashdown in the Bay of Bengal

  December 18, 2024 coincides with the 10th anniversary of the sub-orbital Crew Module Atmospheric Re-entry Experiment ***(CARE) mission*** *of 2014.*

- **HLVM3** – Human rated launch vehicle, HLVM3, is derived from LVM3 and designed with enhanced *reliability to meet human safety considerations*.

- It is ***a 3-stage vehicle*** with a payload capacity of about *10 tonnes to LEO*.
- The vehicle is 53 meters tall and weighs 640 tonnes.
- **Orbital module components** – The *service module and the crew module* together make up the ***orbital module***
- The crew module is progressing at the *Vikram Sarabhai Space Centre*, at Thumba in Kerala.
- Once the crew module is ready, it will be transferred to the *U.R. Rao Satellite Centre (URSC), Bengaluru*, for integration with the service module.
- After a series of tests including thermo-vacuum tests at the URSC, the orbital module will be transported to Sriharikota to be placed aboard the launch vehicle.
- The crew module is connected to the c*rew escape system* which is placed at the very top.

Orbital Module Components	Launch Vehicle components
• Service Module • Crew module	• S200 solid rocket boosters • L110 liquid stage • C32 cryogenic stage

References

1. The Hindu| Integration of Components of Gaganyaan G1 Mission
2. ISRO| HLVM3