

ISRO To Carry Out First Gaganyaan Test Flight : 21 October

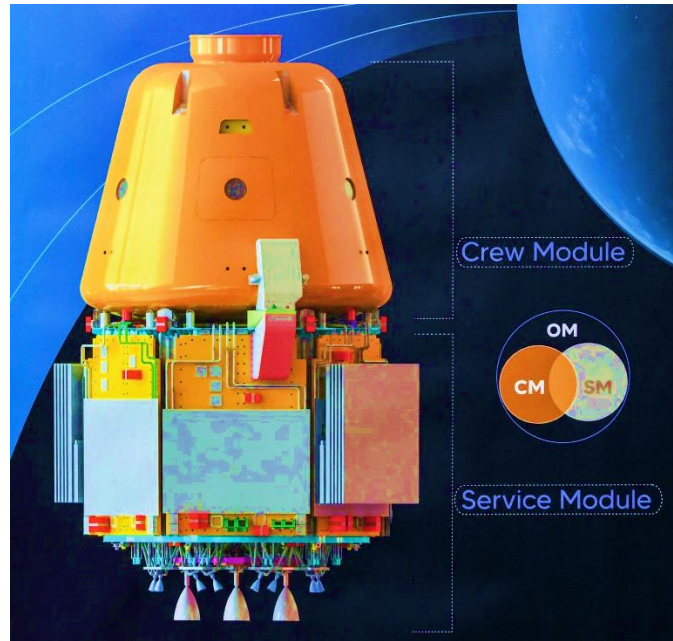
Why In News

- ISRO will carry out the **first of several test flights** ahead of the Gaganyaan mission on **October 21**, Science and Technology Minister Jitendra Singh said.
- The test vehicle development flight (**TV-D1**) will be conducted at the Satish Dhawan Space Centre in **Sriharikota in Andhra Pradesh** to test the crew module that is scheduled to house Indian astronauts during the human spaceflight late next year.



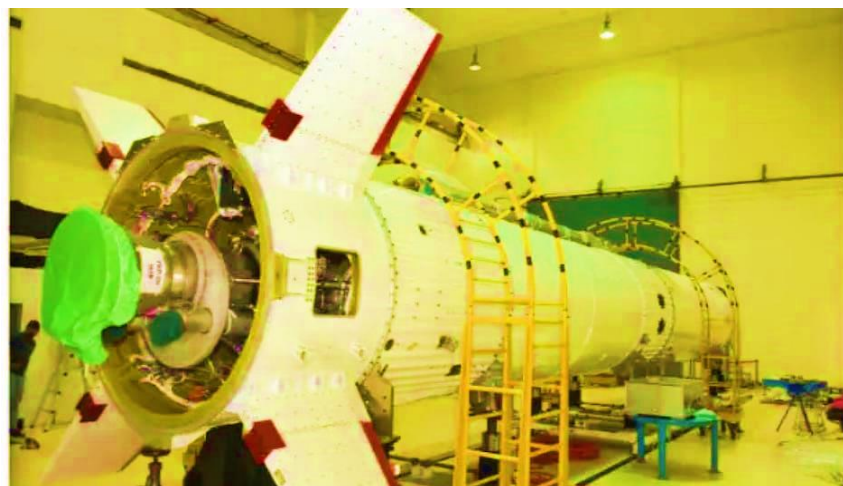
About The Gaganyaan Project

- With the Gaganyaan mission, ISRO hopes to demonstrate **its human spaceflight** capabilities by launching three astronauts to a **400-kilometre orbit** for a period of **three days** and then bringing them back safely to Earth.
- Gaganyaan is significant because it is the **first indigenous mission** that will send Indian astronauts to space. If it succeeds, India will be the fourth country to have sent a human to space.
- Currently, the **United States, Russia and China** are the only three countries with the capability to launch public human space missions. Of course, there are also private companies like **SpaceX** that have already proven their crewed mission launch capabilities.



What Does The Test Involve

- The Gaganyaan **Test Vehicle Development flight (TV-D1)** will be the **first among two sets of trial flights** that the Indian Space Research Organisation has planned before an Indian astronaut will fly to space - in an Indian craft sitting atop an Indian an Indian rocket.
- The test involves launching the module to outer space, bringing it back to earth and recovering it after touchdown in the Bay of Bengal.
- The **Navy has already started mock** operations to recover the module, Singh said at a felicitation programme of the ISRO engineers involved in the Chandrayaan-3 and Aditya L-1 missions.

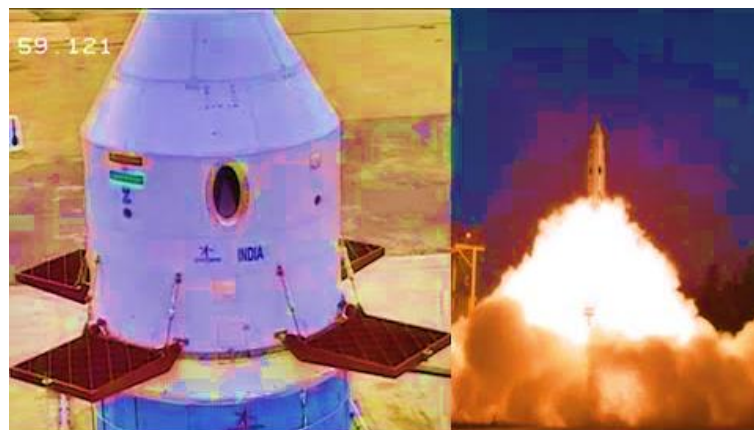


Crew Module & Crew Escape System

- The Gaganyaan mission's **crew module will be where the astronauts will be staying** during the mission with pressurised Earth-like conditions.
- But TV-D1 will be testing an unpressurised version of the crew module that is now ready to be shipped to the launch complex.



- The unpressurised version has the same overall size and mass as the actual module, and it houses all the same systems for deceleration and recovery.
- It has a complete set of parachutes and has recovery aids, actuation systems, and pyros. The avionics systems in the crew modules are in a “dual redundant mode” configuration to provide navigation, sequencing telemetry, instrumentation and power.
- Along with the crew module, the **TV-D1 will also test the "crew escape"** system that is expected to bring back the crew to earth if the spacecraft faces a problem while ascending into space.



Significance of the test

- The Success Of Test Will Set Stage For First Unmanned "Gaganyaan" Mission And Ultimately, A **Manned Mission To Outer Space** In A Low-earth Orbit.
- Before Ultimate Manned "Gaganyaan" Mission, There Will Be A Test Flight Next Year, Which Will Carry "**Vyommitra**", A Female Robot Astronaut.

