Tiangong Space Station

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In news– As part of the final phase, three Chinese astronauts have entered the Tiangong Space Station module after a successful launch recently.

About Tiangong Space Station-

- Hours after they were launched into the designated orbit by the **Shenzhou-14 spacecraft**, which later docked with the orbiting **module of the space station called Tianhe** and cargo crafts attached to it, the three astronauts successfully entered for a **six-month stay**.
- **The trio will** cooperate with the ground team to **complete the assembly and construction of the Tiangong space station,** developing it from a single-module structure into a national space laboratory **with three modules**–

    1. The core module.
    2. Tianhe.
    3. Two lab modules – Wentian and Mengtian.

- **Tiangong is a space station being constructed by China in low Earth orbit between 340 and 450 km** above the surface.
- Being China's first long-term space station, it is the goal of the "Third Step" of the China Manned Space Program.
- It will have a mass between 80 and 100 t, roughly one-fifth the mass of the International Space Station and about the size of the decommissioned Russian *Mir* space station.
- The construction of the station is based on the experience gained from its precursors, Tiangong-1 and Tiangong-2.
- The **first module, the *Tianhe* ("Harmony of the Heavens") core module, was launched on 29 April 2021**, followed by

multiple crewed and uncrewed missions and two more modules to be launched in 2022.

- **Once Tiangong is complete, China will be the only country to operate a space station of its own,** adding to other accomplishments such as landing on Mars in 2021 and on the far side of the moon in 2019.
- The China Space Station (CSS) may become the sole space station to remain in orbit once the aging ISS retires in the coming years.
- The **significant feature of China's under-construction space station is its two robotic arms, especially the long one over which the US has previously expressed concern over** its ability to grab objects including satellites from space.
- The core module is mounted with a big mechanical arm, and the Wentian lab module with a small one.
- During the Shenzhou-14 mission, the crew will, for the first time, be aided by the small mechanical arm to get out of the space station.
- The space station is designed to be a versatile space lab, capable of accommodating 25 experiment cabinets for scientific exploration.
- **The experiment cabinets can support experiments on life and ecology and biotechnology.**
- **Astronauts can conduct experiments on molecules, cells, tissues, and organs in Wentian** by using diverse online detection methods, such as visible light, fluorescence, or microscopic imaging.
- **During their stay in orbit, the Shenzhou-14 crew will witness the two lab modules**, Tianzhou-5 cargo craft and Shenzhou-15 crewed spaceship dock with the core module Tianhe.