Vikram-1 Rocket

Prelims: *Current events of national and international importance | Science and Technology*

Why in News?

- Vikram-1 is ***India's first privately developed orbital-class rocket***.
- Its maiden test flight is named Mission Aagaman ("the arrival").

Mission Aagaman *will be a partially commercial flight carrying domestic and international payloads, specifically targets a 450 km altitude orbit at a 60-degree inclination.*

- **Developed by -** Hyderabad-based Skyroot Aerospace.
- This follows the suborbital flight of Vikram-S, which was the first private rocket to reach space from Indian soil in 2022.
- **Launch Window -** Set between July 12 and August 4, 2026.
- **Launch Site -** Satish Dhawan Space Centre (SDSC-SHAR) in Sriharikota, Andhra Pradesh.
- **Primary Objective -** To gather crucial real-time in-flight performance data (propulsion, stage separation, guidance, and navigation) that cannot be replicated via ground testing, validating designs for future high-cadence commercial operations.
- **Structure & Build -** A 7-storey-tall, multi-stage vehicle featuring an all-carbon composite structure engineered for rapid manufacturing.
- **Propulsion -** Powered by in-house solid and liquid propulsion systems, utilizing advanced 3D-printed engines and high-thrust solid-fuel boosters.
- **Capacity & Orbit -** Designed to deploy small satellites weighing up to 350 kg into Low Earth Orbit (LEO).
- **Avionics & Control -** Operates autonomously via complex onboard intelligence with no pilot or manual joystick controls.

Reference

[The Hindu | Vikram-1]

