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Daily news summary**Gaganyaan Mission Crew Escape System**

UPSC Civil Services · 25 August 2026 · Prelims and Mains

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WHY IN NEWS

- ISRO detailed the architectural mechanisms of the Crew Escape System designed to protect crew members during launch phase emergencies.

WHAT IS THE GAGANYAAN CREW ESCAPE SYSTEM?

- An emergency safety mechanism integrated into the Human Rated LVM3 (HLVM3) launch vehicle.
- Designed to quickly separate the Crew Module from the rocket in case of catastrophic malfunction during ascent.

KEY STRUCTURAL FEATURES

- Employs a high-thrust puller rocket design mounted above the Crew Module rather than a pusher mechanism.
- Utilizes automated detection systems capable of identifying off-nominal flight parameters within milliseconds to trigger autonomous ejection.

WHY IT MATTERS

- Establishes human-rating standards required for domestic human spaceflight safety protocols.
- Validated through low-altitude and high-altitude flight abort demonstration tests (TV-D1) prior to crewed orbital missions.

KEY TERMS

- **Human Rating:** The certification process ensuring a launch vehicle's systems meet strict reliability and safety redundant standards for carrying human crew.
- **Puller Design:** A escape mechanism where emergency motors located ahead of the module pull it away from a malfunctioning launch vehicle.

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PRELIMS FACTS

- The Gaganyaan mission uses a puller motor configuration on its launch escape tower to separate the Crew Module during ascent aborts.

MAINS DISCUSSION

- Discuss the significance of human-rating technologies and safety redundancies in establishing India's indigenous spaceflight capabilities.

KEY DATA

- **Launch Vehicle:** HLVM3 - The modified, human-rated variant of ISRO's LVM3 (GSLV Mk III) rocket for the Gaganyaan mission.
- **Managing Agency:** ISRO - India's premier space agency executing the national human spaceflight program.

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