



KAMARAJ IAS ACADEMY
Only IAS Academy by Grandson of "Per.uthalsivar Kamarajar"

Shenzhou-20 & Space Debris (MMOD)

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Subject Reference: GS Paper III (Science & Technology - Space)

- **The News (Dec 2025):** An orbital debris strike cracked a window of China's Shenzhou-20 spacecraft. This forced the crew to delay their return and sparked a rare rescue mission using another docked vehicle.
- **Apt Topic: "The Sustainability of Outer Space & The Kessler Syndrome"**
- **MMOD Threat:** Micrometeoroids and Orbital Debris (MMOD) travel at speeds up to **10 km/s**. At this velocity, even a paint fleck has the kinetic energy of a bullet.
- **Kessler Syndrome:** This incident highlights the risk of a "runaway" effect where debris collisions create more debris, eventually making certain orbits (like LEO) unusable for future generations.
- **Global Governance:** Use this to discuss the **UN COPUOS (Committee on the Peaceful Uses of Outer Space)** and the need for international treaties on active debris removal.

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