

Human-rated S200 rocket booster

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In news– The Indian Space Research Organisation (ISRO) has successfully completed the static test of the human-rated solid rocket booster (HS200) recently.

About human-rated solid rocket booster (HS200)-

- The HS200 is a 20-metre-long booster with a diameter of 3.2 metres and is the **world's second-largest operational booster using solid propellants.**
- The control system used in the HS200 booster employs one of the world's most powerful electro-mechanical actuators with multiple redundancy and safety features, according to the VSSC.
- The test was held at the Satish Dhawan Space Centre, Sriharikota.
- The **booster engine is part of the Geosynchronous Satellite Launch Vehicle MkIII (GSLV Mk III or also called the LVM3)** rocket that will carry Indian astronauts to space.
- This full-duration test of the first stage of the launch vehicle marks a major milestone for the Gaganyaan Programme.
- The GSLV MK III rocket is a three-staged vehicle.
 - The first stage is powered by solid fuel.
 - The second is liquid fuel.
 - The third is the cryogenic stage powered by liquid hydrogen and liquid oxygen.
- The S200 motor – the first stage of the LVM3 launch vehicle designed to deliver 4,000 kg satellites to geosynchronous transfer orbit was configured as a strap-on rocket booster.
- **Design and development of the HS200 booster were**

completed at the Vikram Sarabhai Space Centre (VSSC) in Kerala's Thiruvananthapuram, and propellant casting was completed at Sriharikota.

Gaganyaan programme-

- India's first manned space flight mission – 'Gaganyaan' – is expected to launch in 2023.
- It envisages undertaking the demonstration of human spaceflight to Low Earth Orbit (LEO) in the short term and will lay the foundation for a sustained Indian human space exploration programme in the long run.
- The objective of the Gaganyaan programme is to demonstrate the indigenous capability to undertake human space flight missions to LEO.
- As part of this programme, two unmanned missions and one manned mission are approved by the Government of India (GoI), the first of which is scheduled to begin in the second half of 2022 followed by the second launch at the end of the same year.