GSAT-7A Launch - GSLV-F11

Why in news?

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ISRO launched the communication satellite, GSAT-7A with GSLV-F11 (Geosynchronous Satellite Launch Vehicles).

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What is GSAT-7A?

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- GSLV-F11 injected GSAT-7A into a Geosynchronous Transfer Orbit (GTO) very close to the intended orbit.
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- GSAT-7A is an advanced communication satellite with a Gregorian Antenna and other new technologies.
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- GSAT-7A is the 39th Indian communication satellite of ISRO to provide services to users in Ku-band over the Indian region.
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- The satellite operating in the Ku band will service communication needs for network-centric operations of the Indian Air Force and the military.
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- Most of the functional requirements of the communication payloads and other systems have been derived from ISRO’s earlier geostationary INSAT/GSAT satellites.
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What is the key feature?

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- At 2,250 kg, GSAT-7A is the heaviest satellite launched by GSLV-Mk-II since it began using the indigenous cryogenic engine.
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- The cryogenic stage of this vehicle has been modified to increase the thrust

rate.
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- The rocket was pushing the limits of its capabilities in launching satellites of the two-tonne class for the seventh time.
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- This is a standout factor with this launch and 12 other successful flights carried out so far by ISRO’s GSLV-Mk-II rocket.
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- They include six successive flights since 2014 with an indigenous cryogenic fuel upper stage.
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What is ISRO's GSLV programme?

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- GSLV-Mk-II is ISRO’s fourth generation rocket with three stages.
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- The first stage has four liquid strap-ons and a solid rocket motor.
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- The second has a high thrust engine using liquid fuel, and the third is the cryogenic upper stage.
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- The indigenous cryogenic engine was tested successfully for the first time in 2014.
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- The cryogenic stage uses liquid hydrogen as fuel and liquid oxygen as an oxidiser.
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- Compared to solid and earth-storable liquid propellant stages, it is a highly efficient rocket stage that provides more thrust for every kg of propellant it burns.
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- ISRO initially used 7 cryogenic engines sold by Russia for the early phase of its GSLV programme that began in 2001.
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- GSLV launches with Russian engines have had mixed success, with only two flights performing well.
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- ISRO is developing a more powerful, fifth-generation GSLV-Mk-III rocket to launch satellites in the 4-6-tonne category.
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- GSLV-Mk-III had a successful development flight recently when it launched

the 3,423-kg GSAT-29 communication satellite.
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- GSLV-Mk-III is the designated launch vehicle for India’s upcoming second moon mission and the first human space flight scheduled for 2022.
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Source: Indian Express

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