Gaganyaan Programme

August 6, 2019

Indian Human Spaceflight Initiative: Gaganyaan Programme

Source: *Press Information Bureau*

The Union Cabinet in 2018 approved the Gaganyaan Programme with demonstration of Indian Human Spaceflight capability to low earth orbit for a mission duration ranging from one orbital period to a maximum of seven days. A human rated

GSLV Mk-lll will be used to carry the orbital module which will have necessary provisions for sustaining a 3-member crew for the duration of the mission. The necessary infrastructure for crew training, realization of flight systems and ground infrastructure will be established to support the Gaganyaan Programme. Two unmanned flights and one manned flight will be undertaken as part of Gaganyaan Programme

Background

ISRO has completed the development of launch vehicle GSLV Mk-lll which has the necessary payload capability to launch a 3-member crew module in low earth orbit. ISRO has also tested the crew escape system which is an essential technology for human space flight. The aerodynamic characterization of crew module has b3een completed as part of GSLV Mk-lll X mission flight. Elements of life support system and Space suit also have been realized and tested. In addition, the orbital & re-entry mission and recovery operations have been flight demonstrated in Space Capsule Re-entry experiment (SRE) mission. ISRO has developed and demonstrated most of the baseline technologies essential for undertaking human spaceflight mission. Globally also, there is a renewed interest in undertaking manned exploration initiatives

Key Highlights

- The Gaganyaan programme, an indigenous mission that would take Indian astronauts to space,
- Gaganyaan is an Indian crewed orbital spacecraft that is intended to send 3 astronauts to space for a minimum of seven days by 2022, as part of the Indian Human Spaceflight Programme.
- The spacecraft, which is being developed by the Indian Space Research Organisation (Isro), consists of a service module and a crew module, collectively known as the Orbital Module.
- It will be for the first time that India will launch its manned mission to space, making the country fourth in line to have sent a human to space.
- Isro's Geosynchronous Satellite Launch Vehicle GSLV Mk III, the three-stage heavy-lift launch vehicle, will be used to launch Gaganyaan as it has the necessary payload capability.
- The launcher uses two S200 solid rocket boosters to provide the huge amount of thrust required for lift off

Significance

- Gaganyaan Programme will establish a broader framework for collaboration between ISRO, academia, industry, national agencies and other scientific organizations.
- It This will allow pooling in of diverse technological and industrial capabilities and enable broader participation in research opportunities and technology development benefitting large number of students and researchers.
- The flight system realization will be through Industry.
- It is expected to generate employment and train human resources in advanced technologies.
- It will inspire a large number of young students to take up science and technology careers for national development.
- Gaganyaan Programme is a national effort and will

Impact

- The programme is expected to spur research and development within the country in niche science and technology domains.
- Huge potential for technology spinoffs in areas such as medicine, agriculture, industrial safety, pollution, waste management, water and food resource management etc.
- Human spaceflight programme will provide a unique micro-gravity platform in space for conducting experiments and test bed for future technologies.
- The programme is expected to give impetus to economic activities within the country in terms of employment generation, human resource development and enhanced industrial capabilities.
- Human Spaceflight capability will enable India to participate as a collaborating partner in future Global space exploration initiatives with long term national benefits