

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE**

**LOK SABHA
UNSTARRED QUESTION NO.1398**

TO BE ANSWERED ON WEDNESDAY, DECEMBER 19, 2018

REUSABLE ROCKET TECHNOLOGY

1398. SHRI B. SENGUTTUVAN:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Indian Space Agency, ISRO is working on reusable technology that would drastically cut the cost of the space missions carried out by ISRO and if so, the details thereof;**
- (b) whether ISRO has created any technology demonstrator using reusable technology and if so, the details thereof;**
- (c) whether ISRO is working on the technology to enable orbital re-entry of the space vehicle, to land the reusable vehicle on airstrip and on reusable rocket stages, etc. and if so, the details thereof; and**
- (d) whether ISRO has any proposal to increase the payload capacity of GSLV Mk III from the present capacity of 4 tonnes to 6.5 tonnes so that its dependence on European Spaceports is done away with and if so, the details thereof?**

ANSWER

**MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PG &
PENSIONS AND IN THE PRIME MINISTER'S OFFICE**

(DR. JITENDRA SINGH):

- (a) Yes, Madam. ISRO is working on reusable technology for reducing the cost of access to space including the**

development of a winged body unmanned reusable launch vehicle for launching payloads into low earth orbits.

- (b) Yes, Madam. ISRO has successfully developed a scaled down (1:5) technology demonstration version of Reusable Launch Vehicle – Technology Demonstrator (RLV-TD) vehicle and successfully carried out the first experimental mission on May 23, 2016 from Satish Dhawan Space Centre, Sriharikota. In this mission, critical technologies such as autonomous navigation, guidance & control and reusable thermal protection system have been successfully demonstrated.**
- (c) Yes, Madam. Development of Reusable Launch Vehicles is a technical challenge and it involves the development of many cutting edge technologies. A series of technology demonstration missions would be required to validate these technologies. In the next phase, an autonomous runway landing experiment is planned releasing the RLV-TD vehicle from a helicopter to demonstrate the runway approach and landing capability. This will be followed by an end-to-end orbital re-entry mission demonstration using a Technology Demonstration Vehicle boosted by propulsion systems.**
- (d) Yes, Madam. ISRO has undertaken the development & qualification of Semi-Cryogenic engine. Further development activities are planned to realise a Semi-cryogenic stage and uprated version of the high thrust GSLV Mk III cryogenic stage, in order to increase the payload capacity of GSLV Mk III from 4 tonnes to 6.5 tonnes.**
