

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE**

LOK SABHA

UNSTARRED QUESTION NO. 1589

TO BE ANSWERED ON WEDNESDAY, JULY 31, 2024

SUCCESSFUL ISRO MISSIONS

1589. SHRI NARESH GANPAT MHASKE:

DR. SHRIKANT EKNATH SHINDE:

SHRI PRAVEEN PATEL:

SMT. DAGGUBATI PURANDESWARI:

Will the PRIME MINISTER be pleased to state:

- (a) the details of the number of spacecraft missions, launch vehicle missions and technology demonstrators which have been successfully realized by the Department of Space since 2014;**
- (b) whether the Mars Orbiter Mission has achieved its stipulated objectives;**
- (c) the major breakthroughs made by AstroSat since its launch in September 2015;**
- (d) the details of the agreements signed by ISRO with other countries in the field of space cooperation during the last ten years;**
- (e) the details of the International space missions and projects in which ISRO has participated; and**
- (f) the details of the future of India's space programme?**

ANSWER

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

(DR. JITENDRA SINGH):

(a) The details of the number of spacecraft missions, launch vehicle missions, and technology demonstrators which have been successfully realized by the Department of Space since 2014:

- Spacecraft Missions : 54 Nos.**
- Launch Vehicle Missions : 53 Nos.**
- Technology Demonstrators : 8 Nos.**

(b) Yes, Sir. The Mars Orbiter Mission has achieved its stipulated technological, as well as scientific objectives. The first inter-planetary mission to Mars, was successful in furthering understanding of Martian atmospheric composition and in providing clues for estimating the loss rate of atmosphere.

(c) The major breakthrough made by the AstroSat mission include:

- (i) Witnessing the 'live' formation of dwarf galaxies.**
- (ii) Detection of UV light emission from a galaxy at 9.3 billion light years away from Earth.**
- (iii) Solving a decade-old puzzle of a source displaying both hot and cold emission characteristics.**
- (iv) Discovery of X-Ray polarisation in the crab nebula.**
- (v) Identification of quasi-periodic oscillations of a black hole system as dynamical frequency.**

- (vi) Witnessing of the 'birth of the black holes'.**
- (d) ISRO has signed more than 120 documents for space cooperation with more than 40 countries/ their entities and 4 multilateral organisations in last decade. These cooperative documents enable the cooperation in the fields of peaceful uses of outer space including: satellite data sharing, joint satellite missions, joint experiments, frequency coordination, technology protection, payload accommodation, calibration & validation, ground station support, and professional exchange. Broad areas of cooperation include: earth observation, satellite communication, satellite navigation, human space flight, space exploration and space situational awareness.**
- (e) ISRO has built satellites with international partners, flown payloads from international partners in ISRO's satellite and conducted joint experiments. Specific examples include: building of two joint satellites with France; accommodating payloads from Bulgaria, Canada, France, Germany, Italy, Sweden, UK and USA in Indian satellite missions; and conducting of joint experiments with France, Japan, and USA.**
- (f) As announced by the Hon'ble Prime Minister, establishing Bhartiya Antariksh Station (BAS) by 2035 and Indian Moon landing by 2040 are identified as part of future roadmap for space exploration programme. Missions towards global characterization of thermospheric-ionospheric response to space weather, study of Venus systems, landing on Martian surface, atmospheric characterization of exoplanets etc. are also under studies in this regard.**

Subsequent to the opening of space sector i.e. Space Sector Reforms 2020, participation of Non-Governmental Entities (NGEs) is enhanced significantly and some of the start-up companies are actively ventured into key space activities viz., launch vehicle building, satellite making, space applications and space situational awareness.

Thus the capability of Indian space eco-system is progressively enhancing towards positioning the country in a global scale.
