



**GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE**

## **"SPACE IN PARLIAMENT"**



**INTERIM BUDGET SESSION OF PARLIAMENT 2019  
(JANUARY - FEBRUARY 2019)**

**COMPILATION OF REPLIES GIVEN IN  
PARLIAMENT DURING 2019**

**Government of India  
Department of Space**

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**PARLIAMENT QUESTIONS – INTERIM BUDGET SESSION OF PARLIAMENT 2019**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.474**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**OPERATIONALISATION OF GSLV**

**474. SHRIMATI PRATYUSHA RAJESHWARI SINGH:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether the Government has taken steps to expedite operationalising of the Geostationary Satellite Launch Vehicle (GSLV) by rectifying the snags noticed in earlier launches;**
- (b) if so, the details thereof;**
- (c) whether the Government has any plans to utilise the GSLV for commercial space launches; and**
- (d) if so, the details thereof and the steps taken by the Government in this regard?**

**ANSWER**

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

**(DR. JITENDRA SINGH):**

- (a) Yes, Madam.**
- (b) Indian Space Research Organisation (ISRO) has carried out the the rectifications, modifications and improvements in the Geostationary Satellite Launch Vehicle (GSLV), based on the recommendations made by the failure analysis committees. These include change of bearing housing material, revision of**

**tolerances and seal clearances of Fuel Booster Turbo Pump of Cryogenic Engine, redesign of the Cryogenic Stage Lower Shroud, revision of connector mounting scheme, wire tunnel configuration and independent inspection & quality checks for all critical components and sub-assemblies. Subsequently, GSLV-D5 with indigenous cryogenic stage was successfully launched on 05<sup>th</sup> January 2014 from Satish Dhawan Space Centre, Sriharikota. After this flight, GSLV with indigenous cryogenic upper stage demonstrated its reliability through five more consecutively successful launches till date.**

**(c) Yes, Madam.**

**(d) Antrix Corporation Limited, the commercial arm of the Department of Space, is exploring the possibility of clinching commercial launch service contract using Geostationary Satellite Launch Vehicle (GSLV).**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.482**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**CHANDRAYAAN - II**

**482. SHRI MALLIKARJUN KHARGE:**

**SHRI V. ELUMALAI:**

**Will the PRIME MINISTER be pleased to state:**

- (a) the current status of the Chandrayaan-II programme;**
- (b) the reasons for missing stipulated deadline of January 2019 for the launch of Chandrayaan-II and by when it is expected to be launched now;**
- (c) whether the delay in the Chandrayaan-II programme resulted in any escalation in the budget of Rs. 800 crore which was announced earlier for the programme;**
- (d) if so, the details thereof; and**
- (e) whether ISRO has planned 32 missions this year 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) Lander (Vikram) is undergoing final integration tests. Rover (Pragyan) has completed all tests and waiting for the Vikram readiness to undergo further tests. Orbiter of Chandrayaan-2 is ready for integration with the Lander.**

- (b) Vikram is totally a new and complicated design. Several tests are to be conducted in order to prove the design. These tests have taken more time than expected.**
- (c) There is no cost escalation due to this delay.**
- (d) Not applicable.**
- (e) Yes. They are 17 launch vehicle missions, 18 satellite missions and one technology demonstration.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.502**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**HUMAN SPACE MISSION**

**502. SHRI T. RADHAKRISHNAN:**

**SHRI S. RAJENDRAN:**

**SHRI S.R. VIJAYAKUMAR:**

**SHRI GAJANAN KIRTIKAR:**

**KUNWAR HARIBANSH SINGH:**

**SHRI SUDHEER GUPTA:**

**Will the PRIME MINISTER be pleased to state:**

- (a) the present status of India's flagship human space mission programme – Gaganyaan;**
- (b) whether the Indian Space Research Organisation (ISRO) has announced to send Indian astronauts to space;**
- (c) if so, the details thereof and the number of astronauts shortlisted for this purpose and the total funds required for the project;**
- (d) whether ISRO has undertaken the development of critical technologies relevant for manned space mission and if so, the details thereof; and**
- (e) the other programmes announced by ISRO for the current year?**

**ANSWER**

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

**(DR. JITENDRA SINGH):**

- (a) **After the approval of Gaganyaan Programme by the Government of India:**
- (i) **A new centre in ISRO, namely Human Space Flight Centre (HSFC) has been formed to carry out the activities for human spaceflight demonstration. Gaganyaan programme is made a part of HSFC.**
  - (ii) **The Gaganyaan programme team has been constituted.**
  - (iii) **System concept review of various systems for Gaganyaan is nearing completion. Design verification for human rating of GSLV-MkIII is completed and external configuration of crew module is finalized.**
- (b) **Gaganyaan programme envisages sending a maximum of three Indian astronauts to space.**
- (c) **The astronaut selection procedure is being finalized and thereafter astronauts will be shortlisted. Total fund approved for Gaganyaan programme is within ₹ 10000 crores.**
- (d) **Yes, ISRO undertook the development of critical technologies before formal programme approval such as Crew Module (CM) systems, Environmental Control & Life Support System (ECLSS), and Crew Escape System (CES). The Crew module configuration was flight tested in the experimental mission of GSLV MkIII on December 18, 2014 and, the re-entry characteristics and the recovery of the Crew Module were successfully demonstrated. Pad Abort Test was carried out successfully on July 5, 2018 to demonstrate the Crew Escape System during any exigency at launch pad.**
- (e) **Remote Sensing, Communication and Science satellites will be the other programmes of ISRO in the current year.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.515**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**SPACE AGENCIES**

**515. SHRI RAJESHBHAI CHUDASAMA:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether the Asia Pacific Regional Space Agency Forum has recommended that the established space agencies in the region should promote space applications including rice crop monitoring, global rainfall monitoring, fire hotspot, haze monitoring and disaster management;**
- (b) if so, the details thereof; and**
- (c) the areas ISRO has been concentrating as far as the above said areas mentioned by Asia Pacific Regional Space Agency are concerned?**

**ANSWER**

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

**(DR. JITENDRA SINGH):**

**(a) & (b)**

**Space Applications Working Group, one of the four Working Groups of Asia Pacific Regional Space Agency Forum (APRSAF), has recommended to further promote space**

**applications, including rice crop monitoring, global rainfall monitoring, fire hotspot, haze monitoring and disaster management, at the 24<sup>th</sup> session of APRSAF held at Bengaluru in November 2017.**

**(c) Indian Space Reseach Organisation (ISRO) is carrying out studies in the above said areas.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.547**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**OUTSOURCING OF SPACECRAFT ASSEMBLY INTEGRATION  
AND TESTING**

**547. SHRIMATI POONAM MAHAJAN:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether the Indian Space Research Organisation (ISRO) and UR Rao Satellite Centre have entered into contractual agreements with multiple vendors to outsource Spacecraft Assembly Integration and Testing (AIT) activities;**
- (b) if so, the details thereof including the scope of work and contractual execution modality; and**
- (c) the number and details of satellites that the vendors are expected to assemble over a specified timeframe?**

**ANSWER**

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

**(DR. JITENDRA SINGH):**

- (a) Yes Madam.**
- (b) A Memorandum of Understanding (MoU) has been signed with three parties to carry out Assembly, Integration and Testing (AIT) of I-1000 Kg to I-3000 Kg class of communication, remote sensing and navigation satellites.**

(c) **It is for 21 units for all the three parties together. One unit is equal to one number of 1-1000 Kg satellite. The contract is for three years and extendable to two more years on mutual consent basis.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.611**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**TRAINING OF ASTRONAUTS**

**611. SHRIMATI RAKSHATAI KHADSE:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether the Government proposes to set up an intensive training center to train the astronauts;**
- (b) if so, the details thereof;**
- (c) whether the Government proposes to launch a manned space mission; and**
- (d) 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) & (b)**

**No, Madam. Department of Space/ISRO does not possess training center at the moment. Presently, it is taking help of Indian Air Force (IAF) for astronaut training.**

**(c) Yes, Madam.**

**(d) The Gaganyaan programme proposes to launch a maximum of three Indian astronauts from Satish Dhawan Space Centre (SDSC), Sriharikota into an approximately 400 Km Low Earth Orbit. The maximum mission planned is of 7 days duration.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.613**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**GAGANYAAN PROGRAMME**

**613. SHRI MALLIKARJUN KHARGE:**

**Will the PRIME MINISTER be pleased to state:**

- (a) the planned budget and the current status of the Gaganyaan;**
- (b) whether India has officially planned to have a woman astronaut as part of the programme and if so, the steps taken for selection and training of Indian astronauts for this programme;**
- (c) whether India will be taking any assistance from foreign nations for this programme, monetarily or otherwise; and**
- (d) 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) After the approval of Gaganyaan Programme by the Government of India:
  - (i) A new centre in ISRO, namely Human Space Flight Centre (HSFC) has been formed to carry out the activities for human spaceflight demonstration.**
  - (ii) The Gaganyaan programme team has been constituted.**
  - (iii) System concept review for various systems of Gaganyaan is nearing completion. Design verification for human rating****

**of GSLV-MkIII is completed and external configuration of crew module is finalized.**

**The amount expected to be spent on this mission is within ₹ 10000 crores.**

**(b) Both male and female candidates are eligible to become astronauts, if they meet the requirements defined for Gaganyaan astronaut.**

**(c) & (d)**

**Yes, ISRO is looking for international partnership in the areas of astronaut training. Discussions are underway with multiple international space agencies.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.642**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**ASSEMBLING OF SATELLITES**

**642. SHRI K. ASHOK KUMAR:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether ISRO has roped in three partners to help it assemble 27 satellites at a quick pace over the next three years;**
- (b) if so, the details thereof;**
- (c) whether ISRO expects 27 spacecrafts ready by July, 2021; and**
- (d) 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, it is for 21 Units.**
- (b) The memorandum of understanding is to carry out Assembly, Integration and Testing (AIT) of I-1000 Kg to I-3000 Kg class communication/ remote sensing/ navigation satellites.**

**(c) & (d)**

**It is for 21 units for all the three parties together. One unit is equal to one number of I-1000 Kg satellite. These 21 units will be completed by July, 2021. The satellites will be decided with respect to their delivery schedules.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.649**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**REMOTE SENSING DATA**

**649. SHRI D.K. SURESH:**

**SHRI NALIN KUMAR KATEEL:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether the Government is using high resolution remote sensing data to bring efficiency in implementation of the Pradhan Mantri Fasal Bima Yojana (PMFBY);**
- (b) if so, the details thereof;**
- (c) whether the Government has achieved the objectives of PMFBY with the use of remote sensing services; and**
- (d) if so, the details thereof and the response of the Government thereto?**

**ANSWER**

**MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PG &  
PENSIONS AND IN THE PRIME MINISTER'S OFFICE  
(DR. JITENDRA SINGH):**

- (a) Yes Madam.**
- (b) Usage of remote sensing for PMFBY is being implemented by Mahalanobis National Crop Forecast Centre (MNCFC) of Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW). Under the present guidelines of PMFBY, use of**

**satellite remote sensing data has been recommended for addressing issues like area discrepancy, yield dispute resolution, loss assessment, on-account payment and Crop Cutting Experiments (CCE) Planning. Accordingly, protocols have suitably been defined and adapted by PMFBY.**

**The DAC&FW, through MNCFC, has used satellite remote sensing data for Yield dispute resolution in few areas/locations. Block level area estimates of major crops are being generated, under the Forecasting Agricultural output using Space, Agrometeorology and Land based observations (FASAL) project of MAC&FW for addressing area discrepancy issues. Also 9 organisations are involved in conducting pilot studies of optimising CCEs.**

**(c) & (d)**

**The objectives of PMFBY towards the use of satellite remote sensing and UAV data is for area estimation, yield estimation, loss assessment, risk zoning, etc., to ensure early settlement of claims to eligible farmers against their crop yield loss.**

**Amongst these, remote sensing-based approaches have already been made operational and protocols have been developed and included in the revised guidelines (e.g. area discrepancy, yield dispute resolution, risk zoning, etc.).**

**However, for validations of few modules/technology solutions, Government is conducting pilot studies through different agencies, for establishing the technology solution for adoption under PMFBY.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA  
UNSTARRED QUESTION NO.655**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 06, 2019**

**GPS SYSTEM**

**655. SHRI NAGAR RODMAL:**

**SHRI OM PRAKASH YADAV:**

**SHRI SUMEDHANAND SARSWATI:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether several shortcomings are being noticed in the GPS system;**
- (b) if so, the reasons therefor;**
- (c) the steps taken so far by the Government to remove the said shortcomings;**
- (d) the measures taken by the Government so far to make the navigation app more effective and to provide correct information;**
- (e) whether any action plan is being implemented by the Government to make GPS system more transparent; and**
- (f) if so, the steps taken in this regard?**

**ANSWER**

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

**(DR. JITENDRA SINGH):**

**(a), (b) & (c)**

**GPS is a satellite-based navigation system maintained by the Government of United States. India's indigenous navigation**

**satellite system is called Navigation with Indian Constellation (NavIC). It is developed by ISRO, and is now fully functional and has no shortcomings reported.**

**(d),(e) & (f)**

**Work is in progress to popularize NavIC in various applications like mobile phones, vehicle tracking system, power-grid synchronization, IST dissemination, etc. Active discussions are being conducted along with technical support/hand-holding to chip and mobile manufacturing companies to include NavIC-based services in their upcoming products.**

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**GOVERNMENT OF INDIA  
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**LOK SABHA**

**UNSTARRED QUESTION NO.1645**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 13, 2019**

**FDI IN SPACE SECTOR**

**1645. SHRIMATI POONAM MAHAJAN:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether the Government has issued any policy guidelines as specified by the Department of Space with respect to Foreign Direct Investment (FDI) in commercial launch vehicle development in the space sector particularly with the objective of promoting launch of small satellites in the country;**
- (b) if so, the details thereof including its entry route and the percentage of equity or FDI cap pertaining to the same;**
- (c) if not, the reasons therefor;**
- (d) whether the Government is considering to frame FDI policy guidelines relating to commercial launch vehicle development in the space sector and if so, the details thereof including the timeframe to implement such guidelines; and**
- (e) whether the Government has received any proposals to formulate FDI policy in commercial launch vehicle operations sector 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) No Madam.**
- (b) Does not arise.**
- (c) Launch vehicle technologies are dual-use in nature and hence, they are highly restricted internationally. ISRO has developed these technologies and related facilities indigenously and all space launch activities are hitherto performed by Department of Space/ISRO only. However, in order to enable private sector industry in space activities, the Department is in the process of enacting a legislation for Space Activities in India, which is under consultation process.**
- (d) Department would consider FDI guidelines in commercial launch vehicle sector, as necessary and at appropriate time, in consultation with Department of Industrial Policy & Promotion (DIPP), MoC&I.**
- (e) Yes Madam, the Department has received a copy of a proposal sent by a private company which is addressed to Department of Industrial Policy & Promotion.**

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**GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE**

**LOK SABHA  
UNSTARRED QUESTION NO.1708**

**TO BE ANSWERED ON WEDNESDAY, FEBRUARY 13, 2019**

**COMMUNICATION SATELLITE**

**1708. SHRIMATI K. MARAGATHAM:**

**Will the PRIME MINISTER be pleased to state:**

- (a) whether the launch of another powerful communication satellite with military applications GSAT-11 has been postponed;**
- (b) if so, the details thereof;**
- (c) whether ISRO will conduct a few more tests on the satellite as a precaution and rectify glitches and if so, the details thereof;**
- (d) whether this is because of the loss of contact with GSAT-6A recently; and**
- (e) if so, the details thereof ?**

**ANSWER**

**MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PG &  
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(DR. JITENDRA SINGH):**

**(a) No Madam. GSAT-11, a communication satellite has already been launched.**

**(b) to (e)**

**After completion of all ground tests, satellite was transported to French Guiana for launch. Further, Launch pad operations were carried out successfully, and on 6<sup>th</sup> December, 2018, GSAT-11 was successfully launched. All required orbit maneouvers were successfully done and GSAT-11 is performing in orbit as per design.**

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GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE

**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 564**

TO BE ANSWERED ON THURSDAY, FEBRUARY 7, 2019

**DEVELOPMENT OF SPACE TECHNOLOGY**

564. SHRI PARIMAL NATHWANI:

Will the PRIME MINISTER be pleased to state:

- (a) whether ISRO has developed any new innovative technology, products and services for the development of space science, research and technology during the last three years;
- (b) if so, the details thereof;
- (c) whether Government has drawn up a long term plan 'Space Vision 2025' for Space Research Programmes and if so, the details thereof;
- (d) whether there is a need for bilateral cooperation with foreign countries/institutes in the field of space science and research and if so, the details thereof; and
- (e) the steps taken by Government to improve research and development in space technology?

**ANSWER**

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

(DR. JITENDRA SINGH):

- (a) & (b) Yes, Space Science experiments often demand development of new technologies. Some of the new developments made in the last three years are as listed below :
- Development of highly polished optical mirrors - for a solar coronagraphic mission – Aditya-L1
  - Development of large, light-weight collimators with non-cylindrical aperture – for x-ray polarimetric applications – XpoSAT mission



- Development of indigenous silicon sensors and coatings for optical and IR spectroscopic applications – for payloads on Chandrayaan-2 mission
- (c) A study committee constituted by ISRO to chart out the long-term program for space science exploration, has prepared a report outlining high priority missions to be taken up. These include followup missions to Mars, a new mission to Venus and a return to Moon with capability to return samples from extra-terrestrial sources.
- (d) Bilateral cooperations are often useful to maximise science returns from payloads due to a large dependency of complimentary information from multiple sensors on ground and in space. Hence these are encouraged on a case-by-case basis. There have been cooperative programs with Canadian Space Agency and UK universities on our astronomy satellite, ASTROSAT ; similar cooperation programs have been established in the past on Chandrayaan-1 mission with NASA and the European Space Agency.
- (e) Indian Space research Organisation through the programme called RESPOND (Sponsored Research) is encouraging academia to participate in the R & D activities. Respond programme provides support to research projects in wide range of topics in space technology, space science and applications to universities/ institutions. ISRO has also set up Space Technology Cells at various institutions like Indian Institute of Technologies (IITs) - Bombay, Kanpur, Kharagpur & Madras; Indian Institute of Science (IISc), Bangalore and with University of Pune (UoP) to carry out research activities. Some of the other recent initiatives for capacity building include setting up of Space Technology Incubation Centres (S-TIC) and Regional Academic Centres for Space (RAC-S).

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GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE

**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 565**

TO BE ANSWERED ON THURSDAY, FEBRUARY 7, 2019

**MANNED MISSION TO SPACE**

565. SHRI NARAYAN LALPANCHARIYA:

Will the PRIME MINISTER be pleased to state:

- (a) whether Government has set anytime-line for sending manned mission to space;
- (b) if so, the details thereof and if not, the reasons therefor;
- (c) whether Government has made an assessment of financial requirements for the manned mission; and
- (d) if so, the details thereof and if not, the reasons therefor?

**ANSWER**

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

(DR. JITENDRA SINGH):

- (a) Yes Sir.
- (b) It is proposed to demonstrate human spaceflight before 75<sup>th</sup> anniversary of Indian Independence (Year 2022).
- (c) Yes Sir.
- (d) The amount expected to be spent on this mission is within Rs. 10,000 crores.

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