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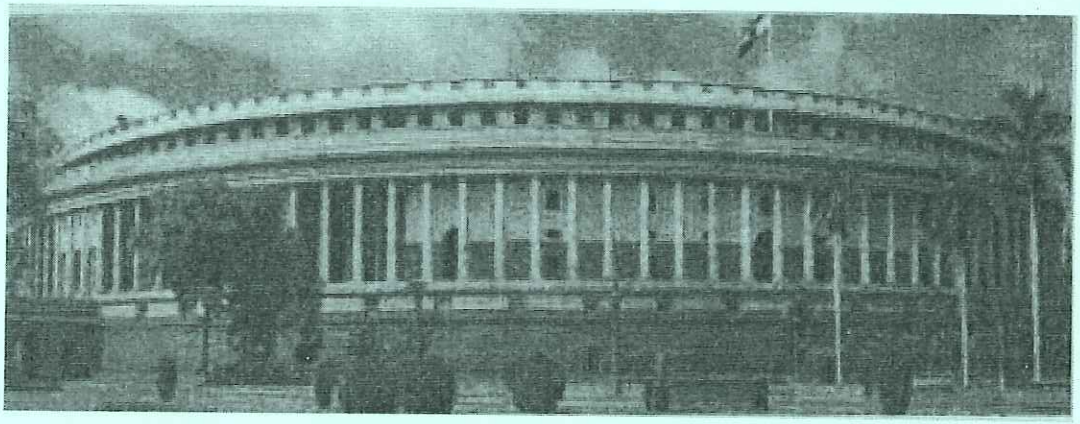
GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

"SPACE IN PARLIAMENT"



BUDGET SESSION OF PARLIAMENT 2021
(FEBRUARY - MARCH 2021)

COMPILATION OF REPLIES GIVEN IN PARLIAMENT DURING 2021

Government of India
Department of Space
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PARLIAMENT QUESTIONS – BUDGET SESSION OF PARLIAMENT 2021
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INDEX

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 449

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 03, 2021

SPACE ACTIVITIES IN INDIA

449. SMT. SAJDA AHMED:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has enabled private players to undertake space activities in India;

(b) if so, the details thereof during the last two years;

(c) whether the Indian Space Research Organization (ISRO) has proposed to transfer space technologies to the Private entities; and

(d) if so, the details thereof and the time by which India's first human space flight mission Gaganyaan is likely to be launched?

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) Government has created a National Level Autonomous Nodal Agency namely Indian National Space Promotion and Authorization Centre (IN-SPACe) under DOS as the enabling

mechanism for private players to carry out Space Activities. Till now, Department of Space has been approached by 26 Indian private industries seeking support for their space activities, spanning across the complete spectrum of space activities including developing launcher, building satellites, developing applications, establishing ground infrastructure. Department of Space is extending every possible support to all the Indian industries in their space activities, including technical guidance, reviews, facility sharing, launch support etc.

(c) Yes, ISRO has got a structured technology transfer mechanism to transfer the identified technologies developed by ISRO for spin-off and other commercial applications on non-exclusive basis. The commercialization will be done by NSIL, the commercial arm of DOS. So far around 363 technologies have been transferred to more than 235 industries. Some of the popular technologies are Li-ion, NavIC receiver, Distress alert transmitter, sensor, special materials, coatings, etc.

(d) The first manned mission of Gaganyaan is planned after two unmanned flights, and the first unmanned flight is scheduled by December 2021.

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O.I.H.

GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 1409

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 10, 2021

SPACE RESEARCH CENTRES

1409. SHRI HARISH DWIVEDI:

Will the PRIME MINISTER be pleased to state:

(a) the number of Space Research Centres in the country at present along with the locations thereof;

(b) whether there is any proposal to set up more Space Research Centres in the country; and

(c) 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) Space Research Centres along with its locations are as follows:

Sl. No.	Centres	Location
1.	Vikram Sarabhai Space Centre (VSSC)	Thiruvananthapuram
2.	Liquid Propulsion Systems Centre (LPSC)	Bengaluru and Valiamala,Thiruvananthapuram
3.	Satish Dhawan Space Centre (SDSC,SHAR)	Sriharikota
4.	U R Rao Satellite Centre (URSC)	Bengaluru
5.	Space Applications Centre (SAC)	Ahmedabad
6.	National Remote Sensing	Hyderabad

Sl. No.	Centres	Location
	Centre (NRSC)	
	5 Regional Remote Sensing Centres	Jodhpur, Delhi, Nagpur, Kolkata, Bengaluru
7.	Human Space Flight Centre (HSFC)	Bengaluru
8.	ISRO Propulsion Complex (IPRC)	Mahendragiri
9.	ISRO Inertial Systems Unit (IISU)	Thiruvananthapuram
10.	Development and Educational Communication Unit(DECU)	Ahmedabad
11.	Master Control Facility (MCF)	Hassan, Karnataka and Bhopal, Madhya Pradesh
12.	ISRO Telemetry, Tracking and Command Network (ISTRAC)	Bengaluru, Lucknow & Port Blair
13.	Laboratory of Electro-Optic Systems (LEOS)	Bengaluru
14.	Indian Institute of Remote Sensing (IIRS)	Dehradun
15.	Physical Research Laboratory (PRL)	Ahmedabad
16.	National Atmospheric Research Laboratory (NARL)	Tirupati
17.	North Eastern space Applications Centre (NE-SAC)	Shillong
18.	Semi-Conductor Laboratory (SCL)	Chandigarh
19.	Indian Institute of Space Science and Technology (IIST)	Thiruvananthapuram
20.	Antrix Corporation Limited (ANTRIX)	Bengaluru
21.	NewSpace India Limited (NSIL)	Bengaluru

(b) & (c)

ISRO is working for a new launch pad at Tuticorin (TN). Land acquisition is in progress, there after it may take 24 months for completion of project.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 1456

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 10, 2021

TRAINING OF ASTRONAUTS

1456. SHRI PARVESH SAHIB SINGH VERMA:

Will the PRIME MINISTER be pleased to state:

(a) the details of initiatives taken by the Government to train astronauts in the country;

(b) the details of progress of the mission Gaganyaan;

(c) the details of effect of COVID-19 on the training of astronauts of mission Gaganyaan; and

(d) whether the Government is on track to achieve the target of sending Indians to space by 2022 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) Following initiatives have been taken by the Government for Indian leg of crew training:

I. Expert team is constituted to define the training curriculum.

II. Plan finalized for astronaut training building including requisite facilities with regard to Gaganyaan mission. Work order for the same has been released.

(b) The details of progress of Gaganyaan is as follows:

I. The preliminary design of Gaganyaan system is completed.

II. Memorandum of understanding (MoUs) signed and in effect with;

- Indian Air Force for crew management activities for Indian human space flight programme;
- Seven (7) DRDO labs for design and development of human centric products; and
- Academic institutes for development of Microgravity payloads.

III. Major contracts signed and in effect.

IV. Crew screening and selection completed. The crew members are currently undergoing generic space flight training at Russia.

V. Human Centric Products: Preliminary design review of various human centric systems such as Space food and Potable water, Crew health monitoring system, Emergency survival kit, Crew medical kit, etc. completed.

VI. Hardware realization is in advanced stage for ground test and first unmanned mission.

VII. Qualification tests of liquid engines as part of human rating of launch vehicle commenced.

(c) As per COVID 19 protocols in Russia and health advisories issued by local authorities, the Astronaut training in Gagarin Cosmonaut Training Center (GCTC), Russia was halted for a period from 28th March, 2020 to 11th May, 2020. As per the revised COVID 19 protocols the training of Indian astronauts has henceforth resumed since 12th May, 2020.

(d) First unmanned mission is planned in December 2021. Second unmanned flight is planned in 2022-23, followed by human spaceflight demonstration.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 1467

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 10, 2021

ISRO FACILITIES

1467. SHRI BHAGWANT MANN:

SHRI GNANATHIRAVIAM S.:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has started allowing external agencies to use ISRO facilities across the globe and if so, the details thereof;

(b) whether the Government allows private sector in space industry;

(c) if so, the details of the benefits of private sector participation in space industry;

(d) whether the Government has analyzed the issues and concerns aboutnational security for privatizing space activities;

(e) if so, the details thereof and the steps taken by the Government toovercome this issue;

(f) whether the Government has enacted space legislations to defineregulatory, legal and procedural regimes with transparent timelines for pursuing space activities by the private space industry; and

(g) 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 Sir. ISRO facilities are extended to Indian industries and academia for testing their space systems. Satellites from M/s. Space Kidz India and M/s. Syzygy Space Technologies have undergone testing at UR Rao Satellite Centre, ISRO.

(b) Yes Sir.

(c) Participation of private sector in space activities in India is expected to result in development of cutting edge Technologies, new applications & services. Overall it will make a bigger impact on space economy.

(d) Yes Sir.

(e) Government has analysed the issues and concerns about national security while allowing Private companies to participate in space activities and appropriate measures have been taken by means of establishing Indian National Space Promotion and Authorisation Center (IN-SPACe), an independent nodal agency to authorize, monitor and regulate space activities in the country.

(f) & (g) The Government is in the process of defining the same through the proposed Space Activities Bill and subordinate legislations.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 1482

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 10, 2021

STARTUPS IN INDIA

1482. SHRI P.C. MOHAN:

Will the PRIME MINISTER be pleased to state:

(a) the number of new companies and Startups registered with ISRO to help build satellites and rockets;

(b) whether India is equipped now to have its own full-fledged GPS NavIC(IRNSS);

(c) if so, the details thereof;

(d) whether Indian telecom service providers or manufacturers have started using this home built GPS system; and

(e) 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) 26 Companies/ startups have approached ISRO seeking technical guidance and facility sharing for their space activity.

(b) & (c)

Yes Sir. Government has developed and operationalized the NavIC (Navigation with Indian Constellation) - an independent Indian satellite-based navigation system to provide PNT (Position, Navigation and Time) service to users over Indian region and region extending to about 1500km around India.

(d) & (e)

Yes Sir. Major mobile chipset manufacturers (Qualcomm, Mediatek) have released NavIC enabled mobile processors. Using these processors, mobile handsets with NavIC capability have been released in the Indian market. Also, Government has been successful in incorporating NavIC as part of international telecom specifications for telecom service providers.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 1542

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 10, 2021

FUND ALLOCATION TO ISRO

1542. SHRI RITESH PANDEY:

Will the PRIME MINISTER be pleased to state:

(a) the amount allocated to the Indian Space Research Organisation (ISRO) for developing capacity for launching of satellites;

(b) whether any revenue has been earned by ISRO by launching satellites of other countries and if so, the details thereof;

(c) whether the Government plans to encourage ISRO as a Commercial Satellites Launch Enterprise so that it could be financially self-reliant;

(d) if so, the details thereof;

(e) if not, the reasons therefor;

(f) whether the Government has formulated any policy to seek cooperation of foreign countries to develop capacity for launching satellites;

(g) if so, the details thereof; and

(h) 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) The amount allocated to ISRO for developing capacity for launching of satellites is Rs. 900 Cr for F.Y. 2020-21.

(b) Department of Space has been involved in launching satellites of foreign countries since long. Total number of satellites launched till date is 328 from 33 different countries and the revenue earned till date is 25 M USD and 189 M Euros.

(c), (d) & (e)

Government of India has established NewSpace India Limited (NSIL), a PSU under Department of Space to commercially launch satellites and become financially self-reliant.

(f), (g) & (h)

ISRO is striving towards achieving Atmanirbharta in the field of capacity development in launching satellites; therefore, no policy is envisaged for seeking foreign cooperation in this direction.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2587

TO BE ANSWERED ON WEDNESDAY, MARCH 10, 2021

MISSIONS OF ISRO

2587. SHRI VIJAY BAGHEL:

Will the PRIME MINISTER be pleased to state:

(a) the details of missions being operationalised by the Indian Space Research Organisation (ISRO) at present;

(b) the timeframe fixed to complete the said missions; and

(c) the details of benefits likely to be accrued at National and Global level after successful completion of the objectives of the said missions?

ANSWER

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

(DR. JITENDRA SINGH):

(a), (b)&(c)

Details of the mission being carried out by ISRO presently with the time line and benefits are mentioned below:

Sl. No.	Satellite	Launcher	Time-Frame	Benefits
1.	EOS-3/ GISAT-1	GSLV MK-2 F10	Mar 2021	Earth observation & Disaster management

Sl. No.	Satellite	Launcher	Time-Frame	Benefits
2.	EOS-02	SSLV-D1	April 2021	Earth Observation Satellite
3.	EOS-4/ RISAT-1A	PSLV C52	July 2021	Microwave Remote Sensing
4.	Commercial Satellite	SSLV-D2	July 2021	Commercial
5.	EOS-6/ Oceansat-3	PSLV C53	Oct 2021	Ocean study
6.	NVS-01/ IRNSS-1J	GSLV MK-2 F14	Nov 2021	Navigational Satellite Part of NavIC Constellation
7.	Gaganyaan 1st Unmanned mission	GSLV	Dec 2021	Demonstration of technology developed for manned mission Gaganyaan.
8.	Aditya-L1	PSLV C56	Dec 2021	Science mission for study of the SUN

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2596

TO BE ANSWERED ON WEDNESDAY, MARCH 10, 2021

PRIVATE SECTOR PARTICIPATION IN SPACE

2596. SHRI KAPIL MORESHWAR PATIL:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has approved certain reforms to boost private sector participation in space sector if so, the details thereof?

(b) whether the Government is aware of the concerns of the Members of the scientific community towards such a move and if so, the details thereof;

(c) whether any steps are being taken to alleviate these concerns and if so, the details thereof;

(d) the role of New Space India Limited (NSIL) in the post reformed space sector and the details thereof; and

(e) the number of private companies that partner with the ISRO as on date and a broad area/sector-wise break up thereof?

ANSWER

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

(DR. JITENDRA SINGH):

(a) Yes Sir, Government of India has made reforms in Space sector by enabling private sector participation in Space activities. The space sector reforms were made with the intention to provide level playing field for private companies in satellites, launches and space-based services, to bring in predictable policy and regulatory environment to private players, to provide access to use ISRO facilities and other relevant assets to improve their capacities, to provide opportunities in selected areas of planetary exploration, outer space travel etc. to private sector and to liberalise the existing geo-spatial data policy for providing remote-sensing data to entrepreneurs.

The Indian National Space Promotion and Authorization Centre (IN-SPACe) was formed as the regulatory body to promote, handhold, permit, monitor and supervise the space activities of private sector.

(b) The concerns of the members of scientific community were expressed while public consultation during the process of firming up the reforms.

(c) The Cabinet note proposing the Space sector reforms has undergone inter-ministerial consultation and the comments received from stakeholders were suitably incorporated.

(d) In the post reformed space sector, NSIL will be involved in space business activities including owning space assets, building satellites, providing launch services, production of launch vehicles & satellites through industry and transfer of ISRO technologies to Indian industries.

(e) **35 companies have given request to DOS for undertaking space activities and the applications are being processed for further action. Sector wise distribution of proposals are as follows:**

Ground Segment	**7 Nos.**
Space Applications	**5 Nos.**
Launch Vehicle	**7 Nos.**
Satellite	**16 Nos.**

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O.I.H.

GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2627

TO BE ANSWERED ON WEDNESDAY, MARCH 10, 2021

SPACE ASSETS

2627. SHRI BASANTA KUMAR PANDA:

Will the PRIME MINISTER be pleased to state:

(a) the steps being taken by the Government to increase the number of space assets (satellites, earth stations, etc.);

(b) whether there is any plan to increase the budget to be spent on Department of Space in the upcoming Budget as compared to the previous years; and

(c) 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) To meet the growing demands of the usage of the Space Technologies and their applications for National Development (Societal, Government, Commercial and Strategic) using Communication, Earth Observation, Navigational and Space Sciences, ISRO has created Expert Committees consisting of

members from ISRO, IMD, NCOAR, I &B, BSNL, DOT and user representatives to address and assess the demand for the satellites for the next generation. Based on the recommendations of the expert committee future satellite projects are conceived.

(b) Yes, Sir.

(c) It is proposed to enhance the Budget Estimates 2021-22 of Department of Space to Rs. 13,949.09 Crore, as against the allocation of Rs. 9500 Crore in RE 2020-21. The budgetary allocations for Indian Space programme shall be utilised towards meeting the future challenges and space preparedness.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2635

TO BE ANSWERED ON WEDNESDAY, MARCH 10, 2021

GENERIC SPACE FLIGHT

2635. SHRI VINOD KUMAR SONKAR:

DR. JAYANTA KUMAR ROY:

SHRI BHOLA SINGH:

SHRIMATI SANGEETA KUMARI SINGH DEO:

SHRI RAJVEER SINGH (RAJU BAAIYA):

SHRIMATI SARMISTHA SETHI:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has formed 'Indian National Space Promotion and Authorisation Centre – IN-SPACe' to accelerate major reforms in the space sector;

(b) if so, the details thereof?

(c) whether the Government has proposed to launch the PSLV-C51 carrying the Amazonia Satellite from Brazil, along with a few smaller Indian satellites;

(d) if so, the details thereof?

(e) whether the Government has trained four Indian astronauts on Generic Space Flight aspects in Russia as a part of the Gaganyaan mission;

(f) if so, the details thereof?

(g) the Other steps being taken/proposed to be taken by the Government in space sector?

ANSWER

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

(DR. JITENDRA SINGH):

(a) & (b)

Yes Sir, Government of India has made reforms in Space sector by enabling private sector participation in Space activities.

The space sector reforms were made with the intention to provide level playing field for private companies in satellites, launches and space-based services, to bring in predictable policy and regulatory environment to private players, to provide access to ISRO facilities and other relevant assets to improve their capacities, to provide opportunities in selected areas of planetary exploration, outer space travel, etc. to private sector and to liberalise the existing geo-spatial data policy for providing remote-sensing data to entrepreneurs.

The Indian National Space Promotion and Authorization Centre (IN-SPACe) was formed as the regulatory body to promote, handhold, permit, monitor and supervise the space activities of private sector.

(c) & (d)

Yes Sir, PSLV-C51 carried Amazonia-1 optical earth observation satellite of National Institute of Space Research of Brazil along with 18 small satellites on February 28, 2021.

(e) & (f)

Yes Sir, the four Indian astronaut candidates are currently undergoing generic space flight training in Russia as part of Gaganyaan Programme. The astronaut training activities in Russia are nearing completion. Major modules such as survival training (snow, water and steppe), parabolic flights, theoretical classes on orbital mechanics, astro-navigation and some Soyuz systems have been completed.

(g) The Government of India is in the process of creating ecosystem for thriving Space industry in India by bringing in new sectoral policies and guidelines and also revising existing policies. The draft Space Activities Bill is also undergoing legal vetting and further processing.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2658

TO BE ANSWERED ON WEDNESDAY, MARCH 10, 2021

ACHIEVEMENTS IN THE FIELD OF SPACE

2658. SHRI SHANTANU THAKUR:

Will the PRIME MINISTER be pleased to state:

(a) the details of the achievements made by the Government in the field of space during the last three years;

(b) whether the Government has taken any initiative to boost 'ISRO' through 'Atmanirbhar Bharat'; and

(c) 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) The details of the achievements of the Department during the last three years is as follows:

Financial Year	2018-2019	2019-2020	2020-2021 (till 28th February 2021)
PSLV	4	4	3
GSLV	1	-	-
GSLV – MkIII	1	1	-
Communication satellites	4	1	1

Financial Year	2018-2019	2019-2020	2020-2021 (till 28th February 2021)
Earth Observation Satellites	2	4	1
Space Science Satellites	-	1	-
Navigation Satellites	1	-	-
Technology Demonstrator	1	-	-
Total Missions	14	11	5

(b) & (c)

Government of India announced reforms for opening up the space sector to private entities by creation of the Indian National Space Promotion and Authorization Center (IN-SPACe) under the Department of Space. IN-SPACe will promote, handhold, regulate and authorize space activity by private sector which will result in enhanced private participation. This will also spur technological development and innovation within the country leading to self-reliance in the field of space technology, a step towards "Atmanirbhar Bharat".

In the process, four student satellites were made ready with the support of ISRO. These satellites were successfully flown onboard PSLV-C51 on 28 February 2021. 35 space startups and industries are in consultation with ISRO for support related to various domains of space activity such as development of satellites, launch vehicles, develop applications, provide space based services etc.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

STARRED QUESTION NO. 306

TO BE ANSWERED ON WEDNESDAY, MARCH 17, 2021

CHANDRAYAAN MISSION

***306. SHRI G.S. BASAVARAJ:**

Will the PRIME MINISTER be pleased to state:

the present status of India's aborted Chandrayaan Mission which is considered as the nation's most ambitious space journey to Moon?

ANSWER

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

(DR. JITENDRA SINGH):

A Statement is laid on the Table of the House.

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STATEMENT LAID ON THE TABLE OF THE LOK SABHA IN REPLY TO STARRED QUESTION NO. 306 REGARDING "CHANDRAYAAN MISSION" ASKED BY SHRI G.S. BASAVARAJ FOR ANSWERING ON WEDNESDAY, MARCH 17, 2021.

Chandrayaan-2 was a highly complex mission to develop and demonstrate the key technologies for end-to-end lunar mission capability, including soft-landing and roving on the lunar surface. It comprised of an Orbiter, Lander and Rover.

But for achieving soft landing at the intended spot, the other objectives of the mission have been significantly attained. So much so, that against an initially envisaged one-year life of orbiter, we expect it to be serving for seven years. The mission has accomplished the objective of expanding the lunar scientific knowledge through detailed study of topography, mineralogy, surface chemical composition, thermo-physical characteristics and tenuous lunar atmosphere leading to a better understanding of the origin and evolution of the moon.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 3476

TO BE ANSWERED ON WEDNESDAY, MARCH 17, 2021

SPACE FACILITIES

3476. DR. KALANIDHI VEERASWAMY:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has opened up its Space facilities for the Private Sector within the country;

(b) if so, the details thereof and the reasons therefor;

(c) whether the Government is aware that this will reduce the role of ISRO within the country; 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, Sir.

(b) In order to encourage and promote private space activities, access to ISRO technology, expertise and facilities which are capital intensive and otherwise not available elsewhere in the

country will be given at free of cost wherever feasible or at reasonable cost to private entities.

(c) Space sector reforms will not reduce the role of ISRO within the country.

(d) With the expansion of space sector, ISRO's major focus will be on innovation, development and qualification of cutting edge space technologies for reliable operation of space systems and also on space science and planetary exploration. Apart from this ISRO will nurture Indian space industries by sharing its experiences on quality and reliability protocols, documentation and testing procedures. ISRO will also identify areas to offer challenges to industries in new domains of technology and Announcement of Opportunity will be made for selected science and exploration missions to private industries.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 3482

TO BE ANSWERED ON WEDNESDAY, MARCH 17, 2021

PRIVATE STARTUPS

3482. SHRI DUSHYANT SINGH:

Will the PRIME MINISTER be pleased to state:

(a) whether ISRO is collaborating with Private Startups for its Human Space Programme and if so, the details of the companies that have shown interest in collaborating with ISRO;

(b) whether ISRO is providing any financial and technical help for these Startups and if so, the details thereof and if not, the reasons therefor;

(c) the programmes under the Human Space Initiative and the details of the programmes in which these companies are allowed to participate;

(d) the current status of Human Space Programme Gaganyaan and its details thereof;

(e) whether the Government can achieve the proposed target of sending man to Space by 75th Independence day and if so, the details thereof and if not the reasons therefor; and

(f) whether ISRO has begun preliminary work to send man to the moon, if so, the details thereof and if not reasons therefor?

ANSWER

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

(DR. JITENDRA SINGH):

(a) No Sir, ISRO is not collaborating with Private start-ups for its Human Space programme as of now.

(b) & (c)

Do not arise.

(d) The current status of Gaganyaan programme is as follows:

i. The preliminary design of Gaganyaan system is completed. Vikas engine (L110) qualification tests and cryogenic engine (C25) qualification tests commenced. Solid booster (S200), Crew escape system and parachute tests planned in 2021. Hardware realization is in advanced stage for ground test and first unmanned mission.

ii. A National level Gaganyaan Advisory Council (GAC) with representatives from all stake holders has been constituted for planning and coordination.

iii. Interagency certification board constituted for Human Rating certification of Gaganyaan mission.

iv. As part of national and international collaboration, Memorandum of Understanding (MoU) and contracts signed with Indian Air force, DRDO laboratories, Academic institutions, M/S JSC Glavkosmos, Russia, NRC Canada, and INCAS Romania.

v. Crew screening and selection completed, Generic space flight training in Russia in progress. Indian leg of training will commence from May/June 2021.

vi. Indian Navy is identified as lead agency for overall recovery operations.

(e) Due to COVID pandemic and subsequent budgetary guidelines, programmatic milestones of Gaganyaan Programme are reassessed and are as follows;

First unmanned flight	: December 2021
Second unmanned flight	: 2022-23
Manned flight	: After successful completion of the above two flights

ISRO is making all efforts to make up the schedule delays due to COVID.

(f) No Sir, ISRO has not begun preliminary work to send man to the moon. The scope of current approved Gaganyaan programme is to demonstrate human spaceflight capability to LEO and safe return of crew.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 3593

TO BE ANSWERED ON WEDNESDAY, MARCH 17, 2021

LPSC

3593. SHRI ADV. ADOOR PRAKASH:

Will the PRIME MINISTER be pleased to state:

(a) the present status of the expansion of Liquid Propulsion Systems Centre (LPSC) ISRO, Valiamala, Thiruvananthapuram;

(b) whether the Government is aware that the inordinate delay in land acquisition is causing difficulties to the land owners in the earmarked land for expansion purpose;

(c) whether the Department of Space will take necessary steps for completing the acquisition process without further delay; 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)

- **Department has initiated the process of acquisition of about 68 acres of land at Valiamala from Government of Kerala.**

- **Preliminary notification under section 11(1) of land acquisition act for the said land has been published by State Government.**

(b), (c) & (d)

The Department has been provided extension for the final notification. Department is working with the State Government to complete the process according to the provisions of Right to Fair Compensation and Transparency in land acquisition, rehabilitation and resettlement Act, 2013.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 3656

TO BE ANSWERED ON WEDNESDAY, MARCH 17, 2021

LAUNCH OF FOREIGN SATELLITES

3656. SHRI POCHA BRAHMANANDA REDDY:

Will the PRIME MINISTER be pleased to state:

(a) the number of foreign satellites launched by ISRO during the last ten years, year-wise;

(b) the net revenue generated by launching of foreign satellites during this period, year-wise;

(c) the steps taken by the Government to increase the satellite (foreign) launch business of the country?

ANSWER

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

(DR. JITENDRA SINGH):

(a) Indian Space Research Organisation (ISRO) through its commercial arms has launched several foreign satellites on-board Polar Satellite Launch Vehicle (PSLV) on a commercial basis. It has launched 303 foreign satellites in the last 10 years. Year wise details of the number of foreign satellites launched from 2011 to 2020 is as indicated below:

Year	Total number of foreign satellites launched year wise
2011	2
2012	2
2013	6
2014	5
2015	17
2016	22
2017	130
2018	60
2019	50
2020	9

(b) Net FE revenue earned through launching of 303 foreign satellites during 2011 -2020 amounts to 179 Million Euros and 7 Million USD.

(c) DOS through its commercial arm, M/s. NewSpace India Limited (NSIL), a Government of India company, has already engaged with several foreign space agencies/ companies for launching their satellites into space, on a commercial basis, using Indian launch vehicles. In addition, NSIL through its participation in Global Space seminars, conferences and exhibitions has been creating awareness among the global space community with regard to the capabilities of Indian launch vehicles and its commercial competitiveness and has attracted many satellite manufacturing companies to utilize the Indian Launch Services and thereby increasing the satellite (foreign) launch business of the country.

*****

GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 4645

TO BE ANSWERED ON WEDNESDAY, MARCH 24, 2021

SPACE POLICY

4645. SHRI VELUSAMY P.:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government is having any proposal to modify the space policy by allowing foreign companies to make satellites and also allowing foreign companies to have space in setting up of facilities;

(b) if so, the details thereof;

(c) the steps taken by the Government regarding national security of our country in allowing foreign companies in sensitive matters;

(d) whether the Government will allow use of launch vehicles and setup ground stations for foreign companies and if so, the details thereof; and

(e) the manner in which the national security will be safeguarded when the country is facing external aggression from neighboring countries?

ANSWER

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

(DR. JITENDRA SINGH):

(a) & (b)

The establishment and operations in satellite segment is governed by the extant provisions of the current FDI policy which permits 100% FDI through the government route subject to sectoral guidelines of DOS.

Government is in the process of revising the existing space policies and new policies are also underway. Sectoral guidelines are being formulated for attracting foreign investments in space supplies and services for the inflow of technology and investment to India.

(c) Indian National Space Promotion and Authorization Centre (IN-SPACe) created as an independent nodal agency under Department of Space will be carrying out its functions for authorising, monitoring and regulating private sector activities in India.

National security will be protected while providing authorisation and licensing permissions.

(d) Yes. Government provides launch services to foreign customer satellites through its CPSEs. Setting up of ground stations is governed in accordance with the existing sectoral guidelines of the Government of India.

(e) National space infrastructure and ground infrastructure are well protected in case the country is facing external aggression from neighboring countries.

*****

GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 4715

TO BE ANSWERED ON WEDNESDAY, MARCH 24, 2021

COMMERCIALIZING SATELLITE PRODUCTION

4715. SHRI ANTO ANTONY:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has taken any policy decision to commercialize satellite production and if so, the details thereof;

(b) the criteria fixed for providing satellites to other countries;

(c) the measures taken to protect the security interests of India while providing commercialized satellite service to other countries;

(d) whether there is any schedule of friendly countries and hostage countries and if so, the details thereof;

(e) the details regarding the purposes for which Indian satellites can be used by foreign countries;

(f) the amount expected by ISRO to earn out of providing satellites to foreign countries; and

(g) the details of existing bilateral agreements between India and other countries with regard to providing satellites?

ANSWER

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

(DR. JITENDRA SINGH):

(a) Government through reform of Space sector has allowed commercial production of satellites in the country. Government has created IN-SPACe for regulation, promotion, monitoring and hand holding of Indian registered companies for making commercial satellites.

(b), (c) & (d)

IN-SPACe being regulatory and authorizing body shall formulate appropriate policies and shall lay down guidelines and criteria for providing satellites to other countries.

National security will be protected while allowing satellite services to other countries through authorization and licensing process.

(e) The Indian satellites can be used by foreign countries for the purposes of Communication, Remote Sensing, Navigation & Science studies.

(f) Post reform ISRO is mandated to focus on research and development activities and commercial activities are to be taken up by CPSEs. The expected earnings are driven by existing market demand and dynamics.

(g) No bilateral agreements between India and any other countries exists with regard to providing dedicated Commercial Satellite.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 4759

TO BE ANSWERED ON WEDNESDAY, MARCH 24, 2021

CHANDRAYAAN – III

4759. SHRI RAVIKUMAR D.:

Will the PRIME MINISTER be pleased to state:

(a) the present status of Chandrayaan-III; and

(b) whether the Government has fixed any time frame for launching crewed mission to moon 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) Chandrayaan-3 is planned as a follow up mission to Chandrayaan-2 with a Propulsion Module, Lander module and Rover. Chandrayaan-3 is in advanced stage of realization. The Propulsion module has been realized and final testing is in progress. The Lander structure is realized and Propulsion system integration is in progress. The special tests are planned to be completed in mid-2021. The integrated spacecraft is being realized for planned launch during 2022.

(b) ISRO has not planned any crewed mission to moon till date.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 4789

TO BE ANSWERED ON WEDNESDAY, MARCH 24, 2021

PRIVATE SATELLITE

4789. SHRI D.M. KATHIR ANAND:

SHRI PRATHAP SIMHA:

Will the PRIME MINISTER be pleased to state:

(a) the details of measures the Government is taking to launch private satellite from India and number of satellites of countries that have been launched and the revenue earned;

(b) whether the Government has finalized the Shukrayaan Mission; and

(c) if so, the details thereof including the cost and objectives of the mission?

ANSWER

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

(DR. JITENDRA SINGH):

(a) NewSpace India Limited (NSIL), a Govt. of India company under Department of Space (DOS), has been launching satellites on-board Polar Satellite Launch Vehicle (PSLV), on a commercial basis. As on date, 342 satellites from 34

countries have been successfully launched on a commercial basis and in the process a FE revenue of 190 M Euros and 56 M USD has been earned.

(b) & (c)

The Shukrayaan Mission is not yet finalized.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 431

TO BE ANSWERED ON THURSDAY, FEBRUARY 04, 2021

PRIME MINISTER'S VISION FOR SPACE TECHNOLOGY

431. DR. SASMIT PATRA:

Will the PRIME MINISTER be pleased to state:

(a) the details of Prime Minister's vision for space technology; and

(b) the manner in which this vision would shape India's space technology for the future generations and its use?

ANSWER

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

(a) The Prime Minister's vision for space technology is to unlock India's potential in space sector; to transform skill, capacity and creativity to make the country self-reliant and technologically advanced. The vision seeks to create opportunities for large scale employment generation in the space sector. India as global space technology powerhouse will play a major catalytic role in the advancement of socio-economic use of space assets, while guiding & promoting private sector through enabling policy environment.

(b) The vision will transform the approach in space sector from supply driven to demand driven model for optimum utilization of national resources while harnessing capacity & creative skills and focus shall be more on R&D, cutting-edge technology, newer frontiers in space, space exploration, human space flight with a view to attract & exploit the potential of the future generation.

The vision will also provide enhanced benefits to the common man, through further development of technology-delivered public services in a faster, cheaper and efficient manner.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 1231

TO BE ANSWERED ON THURSDAY, FEBRUARY 11, 2021

EFFORTS MADE TO DEAL WITH SPACE POLLUTION

1231. DR. SASMIT PATRA:

Will the PRIME MINISTER be pleased to state:

whether any concerted efforts are being made by India in consultation with other countries to deal with the issue of space pollution due to the present debris of older and disintegrated satellites and space stations?

ANSWER

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

India has been making concerted efforts in collaboration with other space agencies/ countries to mitigate and remediate the issues of space pollution due to space debris. India has been contributing to the technical and policy related efforts on Space Debris and Space Situational Awareness through international bodies like Inter Agency Space Debris Co-ordination committee (IADC), IAA Space Debris Working Group and UNCOPUOUS. Indian Space Research Organisation continues its coordination with other space agencies in safeguarding our space assets by mitigating collision threats and puts efforts to contain the growth of Space Debris environment.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 1232

TO BE ANSWERED ON THURSDAY, FEBRUARY 11, 2021

ADOPTION OF ATAL TINKERING LABS (ATLs) BY ISRO

1232. SHRI SAMBHAJI CHHATRAPATI:

Will the PRIME MINISTER be pleased to state:

(a) whether a decision has been taken by ISRO to adopt Atal Tinkering Labs (ATLs) across the country to promote education in the field of space education and space technology

(b) if so, the details thereof;

(c) the number of schools identified by ISRO for such a facility and whether the activities designed have been introduced in some of such schools; and

(d) the action ISRO proposes to take to introduce space education and space technology to the school students in consultation with the Ministry of Education?

ANSWER

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

(a) & (b)

Yes, ISRO has adopted Atal Tinkering Labs across the country in the field of space education and technology.The whole programme is divided into two phases. First phase includes 45 labs and 2nd phase covers balance 55.

(c) The 45 labs adopted in the first phase is enclosed at Annexure. Due to pandemic situation, activities are progressing as per Ministry of Education guidelines.

(d) ISRO is designing space education & space technology as an extra curriculum activity for the schools to utilise ATLs,which will have the endorsement of Ministry of Education.

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Annexure referred to in reply to part (c) of the Rajya Sabha Unstarred Question No. 1232 for answer on 11.02.2021

Annexure

Phase-1 List of Schools (ATLs)

Following 45 nos. of Atal Tinkering Labs (ATLs) are adopted by DOS in phase-I

S. No	Name Of School	District	State / UT
1.	Kendriya Vidyalaya ,IISC	Bengaluru Urban	Karnataka
2.	Kendriya Vidyalaya,Hebbal, Bangalore	Bengaluru Urban	Karnataka
3.	Kendriya Vidyalaya, NAL Campus, Bengaluru	Bengaluru Urban	Karnataka
4.	Government High School, Abbigere	Bengaluru Urban	Karnataka
5.	Govt. Junior College High School Section, Peenya	Bengaluru Urban	Karnataka
6.	GJC, Kadugodi	Bengaluru Urban	Karnataka
7.	Government Pre University College, Madiwala	Bengaluru Urban	Karnataka
8.	Kendriya Vidyalaya, Air Force Station, Yelahanka	Bengaluru Urban	Karnataka
9.	Government High School, Yantaganahalli	Bengaluru Rural	Karnataka
10.	Kendriya Vidyalaya, Rail Wheel Factory	Bangalore Urban	Karnataka
11.	BBMP Composite PU College, Kasturbanagar	Bangalore Urban	Karnataka
12.	Shri Kashi Vidya Vihar Gujarati MadhyamikShala	Ahmedabad	Gujarat
13.	Shree Gyanmanjri School - Ralgon	Bhavnagar	Gujarat
14.	Sanskruti Vidhyalaya, Deodar	Banaskantha (Palanpur)	Gujarat
15.	Jay Ambe Vidhyalaya, Dhamasiya	Chhota Udaipur	Gujarat
16.	Dakshinamurty Vidhyamandir	Bhavnagar	Gujarat
17.	Jawahar Navodaya Vidyalaya, Ongole	Prakasam	Andhra Pradesh
18.	AP Model School	Ysr District, Kadapa (Cuddapah)	Andhra Pradesh
19.	ZPHS Girls Narayanavam	Chittoor	Andhra Pradesh
20.	APSWR School, SANGAM	Sri Potti Sriramulu Nellore	Andhra Pradesh
21.	Kendriya Vidyalaya, Nellore	Sri Potti Sriramulu Nellore	Andhra Pradesh
22.	Defence Laboratories School RCI	Rangareddy	Telangana
23.	Government High School, Mudfort Hyderabad	Hyderabad	Telangana
24.	Zilla Parishad High School	Rangareddy	Telangana
25.	Government High School, Vijayanagar Colony	Hyderabad	Telangana

S. No	Name Of School	District	State / UT
26.	Government Boys High School	Hyderabad	Telangana
27.	Zilla Parishad High School	Rangareddy	Telangana
28.	Government High School Kulsumpura	Hyderabad	Telangana
29.	Government High School Malakpet	Hyderabad	Telangana
30.	Narayana Concept School	Hyderabad	Telangana
31.	Narayana High School	Hyderabad	Telangana
32.	Viswadeepthi English Medium School	Thiruvananthapuram	Kerala
33.	Sarvodaya Central Vidyalaya	Thiruvananthapuram	Kerala
34.	KendriyaVidyalaya	Thiruvananthapuram	Kerala
35.	Kendriya Vidyalaya	Thiruvananthapuram	Kerala
36.	Govt Girls HSS Attingal	Thiruvananthapuram	Kerala
37.	Govt Girls Higher Secondary School Nedumangad	Thiruvananthapuram	Kerala
38.	Govt. V&HSS Vellanad	Thiruvananthapuram	Kerala
39.	GHSS Bharathannoor	Thiruvananthapuram	Kerala
40.	Govt High School Plavoor	Thiruvananthapuram	Kerala
41.	St Rochs High School	Thiruvananthapuram	Kerala
42.	Kendriya Vidyalaya CRPF Pallipuram	Thiruvananthapuram	Kerala
43.	St Philomenas Girls High School Poonthura	Thiruvananthapuram	Kerala
44.	The Indian Public School Rajawala	Dehradun	Uttarakhand
45.	Saraswathi Vidyanikethan Central School	Thrissur	Kerala

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

STARRED QUESTION NO. 254

TO BE ANSWERED ON THURSDAY, MARCH 18, 2021

INDIANS IN SPACE ARENA

*254. SHRI A. VIJAYAKUMAR:

Will the PRIME MINISTER be pleased to state:

(a) whether Government has any proposal to send humans in space;

(b) if so, the details thereof;

(c) whether Government will bring back the Indian experts/specialists of this field from various countries/organisations including NASA; and

(d) 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) to (d) A Statement is laid on the Table of the House.

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STATEMENT LAID ON THE TABLE OF THE RAJYA SABHA IN REPLY TO STARRED QUESTION NO.254 REGARDING "INDIANS IN SPACE ARENA" ASKED BY SHRI A. VIJAYAKUMAR FOR ANSWERING ON THURSDAY, MARCH 18, 2021.

a) & (b)

Yes Sir, the Gaganyaan programme envisages sending humans in space. The objective of Gaganyaan programme is to demonstrate the capability to send humans to Low earth orbit (LEO) onboard an Indian Launch vehicle and bring them back to earth safely.

c) & (d)

Sir, ISRO has wide experience in technological areas with respect to launch vehicle, spacecraft management and ground infrastructure etc. ISRO has taken steps for human rating of existing systems to ensure crew safety. We are also proud of the fact that many Indian scientists are doing significant work in collaboration with international institutions. If there is any proposal to get benefit out of their specialized experience, Government of India will definitely consider such proposal in a positive manner.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2679

TO BE ANSWERED ON THURSDAY, MARCH 18, 2021

DANGER OF DEBRIS ORBITTING THE EARTH

2679. SHRI HARSHVARDHAN SINGH DUNGARPUR:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that thousands of pieces of satellite debris orbiting the earth, pose a danger;

(b) if so, the details thereof;

(c) whether Government is planning to remove the debris;

(d) if so, the details thereof; and

(e) 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. Thousands of pieces of satellite debris orbiting the Earth pose a danger.

(b) Space Debris has become a real threat to operational spacecraft, especially in Low Earth Orbits (LEO) and manned missions. The collision threats in Geosynchronous orbits (GEO) are less. As of now, there are more than 23,000 space objects having size of about more than 10 cm in LEO and of size 1m in GEO which are catalogued by USSPACECOM and the number is increasing significantly year after year. ISRO analyses the threat of collision from space objects to its operational assets in LEO and GEO on a daily basis and in case the collision probability is beyond a certain threshold, the spacecraft undergoes maneuver to avoid collision.

(c) & (d)

Presently Research activities have started to study the feasibility to remove Debris. Active Debris Removal (ADR) is one of the methods suggested by Space Debris Research Community to contain the growth of Space Debris Objects.

(e) Does not arise

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2678

TO BE ANSWERED ON THURSDAY, MARCH 18, 2021

USE OF INFRASTRUCTURE FACILITES BY PRIVATE SECTOR

2678. SHRI SANJAY RAUT:

Will the PRIME MINISTER be pleased to state:

(a) whether the Indian Space Research Organisation (ISRO) has decided to open up its space to the private sector;

(b) if so, the details thereof indicating the proposals received by various companies for using ISRO's infrastructure facilities;

(c) quantum of revenue earned by the ISRO from launching satellites of various private and international agencies during the last three years; and

(d) the details of steps taken or proposed by Government to develop ISRO's space business to earn more revenue, particularly from abroad?

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) List of applications processed by IN-SPACe interim Committee for accessing ISRO facilities are given below:

Sl. No.	Name of applicant	Request from applicant
1.	Agnikul Cosmos Pvt, Chennai	Access to ISRO facilities for building, testing and launching small satellite launch vehicle subsystems.

Sl. No.	Name of applicant	Request from applicant
2.	Skyroot Aerospace Ltd, Hyderabad	Access to ISRO facilities for building, testing and launching small satellite launch vehicle subsystems.
3.	Indian Institute of Technology Bombay (IITB)	Access to ISRO facilities for building, testing and launching small solid rockets.
4.	PIXXEL India, Bangalore	Access to ISRO facilities for testing of small satellite.
5.	UnitySAT	Access to ISRO facilities for testing of nano satellites
6.	Space Kidz India, Chennai	Access to ISRO facilities for testing of nano satellite
7.	MapmyIndia, New Delhi	Mutual sharing of geospatial data and services

(c) Indian Space Research Organisation (ISRO)/DOS through its commercial arms, has been launching several foreign satellites on-board Polar Satellite Launch Vehicle (PSLV) on a commercial basis. During the last three years from 2018 to 2020, a total of 110 foreign satellites have been launched. Net FE revenue earned through launching of these 110 foreign satellites amounts to 44 Million Euros and 3 Million USD

(d) Towards developing ISRO's space business and the space commerce, M/s. NewSpace India Limited (NSIL), a Government of India company, the commercial arm of DOS has been engaging with several foreign space agencies/ companies for launching their satellites into space, on a commercial basis, using Indian launch vehicles as well as providing mission support services using Indian ground stations and also looking into the option of building satellites.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 3468

TO BE ANSWERED ON THURSDAY, MARCH 25, 2021

MARS MISSION

3468. SHRI K.J. ALPHONS

Will the PRIME MINISTER be pleased to state:

(a) the status of the Mars Mission;

(b) when the next launch of unmanned vehicle to Mars; and

(c) the lessons learned from the earlier mission?

ANSWER

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

(a) Mars Orbiter Mission (MOM) completed 6 years in its orbit on September 24, 2020, though the designed mission life was 6 months. ISRO has been continuously monitoring the spacecraft and its five scientific instruments are in good health. Scientific analysis of the data being received from MOM spacecraft is in progress.

(b) Next mission to Mars is under study phase only.

(c) MOM is primarily a technology demonstration mission and all the mission objectives were successfully met. The main lessons learnt were in the field of design & realization of systems and subsystems, launch for interplanetary mission, insertion into other planet's orbit, operation of the spacecraft and scientific instruments around Mars orbit. The lesson learnt have raised the confidence of ISRO scientist for taking up future interplanetary missions.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 3469

TO BE ANSWERED ON THURSDAY, MARCH 25, 2021

SATELLITE LAUNCHES FROM INDIA

3469. SHRI DEREK O' BRIEN

Will the PRIME MINISTER be pleased to state:

(a) the details of total satellites launched from Indian soil during the last three years;

(b) the number of satellites which were launched were 'Made in India';

(c) the number of satellites launched which were of foreign countries; and

(d) the number of Indian satellites, if any, were launched from foreign soil during the last three years?

ANSWER

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

(DR. JITENDRA SINGH):

(a) The details of the total satellites launched from Indian soil in the last three years is as follows:

Launch date	Launcher	Satellite name
12/04/2018	PSLV	IRNSS-1I
16/09/2018	PSLV	NovaSAR, S1-4
14/11/2018	GSLV	GSAT-29
29/11/2018	PSLV	HysIS & 30 international commercial satellites

Launch date	Launcher	Satellite name
05/12/2018	Foreign	GSAT-11
19/12/2018	GSLV	GSAT-7A
24/01/2019	PSLV	Microsat-R, Kalamsat-V2
06/02/2019	Foreign	GSAT-31
01/04/2019	PSLV	EMISAT & 28 international commercial satellites
22/05/2019	PSLV	RISAT-2B
22/07/2019	GSLV	Chandrayaan-2
27/11/2019	PSLV	Cartosat-3 & 13 international commercial satellites
11/12/2019	PSLV	RISAT-2BR1 & 9 international commercial satellites
17/01/2020	Foreign	GSAT-30
07/11/2020	PSLV	EOS-01 & 9 international commercial satellites
17/12/2020	PSLV	CMS-01
28/02/2021	PSLV	Amazonia-1, 5 Indian Satellites & 13 commercial satellites

(b) A total number 18 satellites launched were 'Made in India'.

(c) A total of 105 satellites launched were from foreign countries.

(d) 3 Indian satellites were launched from foreign soil during the last three years

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