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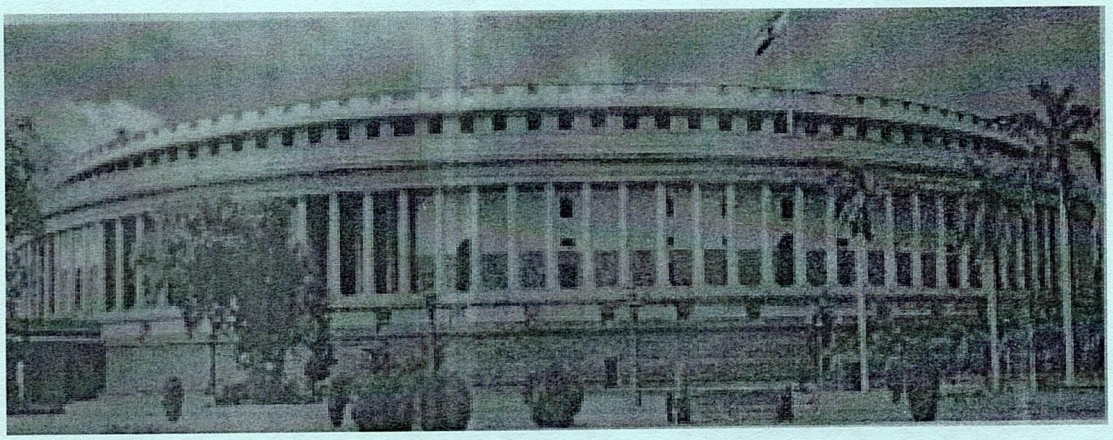
GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

"SPACE IN PARLIAMENT"



BUDGET SESSION OF PARLIAMENT 2020
(JANUARY - MARCH 2020)

COMPILATION OF REPLIES GIVEN IN PARLIAMENT DURING 2020

Government of India
Department of Space
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PARLIAMENT QUESTIONS – BUDGET SESSION OF PARLIAMENT 2020

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 477

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 05, 2020

HUMAN SPACE FLIGHT MISSION

477 SMT. RAKSHA NIKHIL KHADSE:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has proposed an advisory committee to be set up for India's human space flight mission Gaganyaan;

(b) if so, the details thereof; and

(c) whether the Government also proposes to train astronauts for this Gaganyaan mission 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 Sir.

(b) The Gaganyaan Advisory Council comprises of Secretaries of Department of Space, Department of Science & Technology, Department of Defense R & D, Department of Scientific & Industrial Research, Principal Scientific Advisor to PM, Senior officials from Armed forces, Indian Coast Guard, Former Chairman ISRO, Member- Space Commission, Former Director

Aeronautical Development Agency, Former Indian Astronaut, Directors of Premier Academic & Research Institutions, and Heads of various Indian Industries.

(c) Yes, Government proposes to train the astronauts prior to the manned mission. The first leg of training will be basic space flight training followed by Gaganyaan mission specific training.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 496

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 05, 2020

APPROVING NAVIC

496 SHRI CHANDRA SEKHAR BELLANA:

SHRI MAGUNTA SREENIVASULU REDDY:

SHRI P.V. MIDHUN REDDY:

Will the PRIME MINISTER be pleased to state:

(a) whether the International mobile standards body 3rd Generation Partnership Project (3GPP) has approved India's regional navigation satellite system, NavIC which would facilitate NavIC's use in mobile phones;

(b) if so, the details thereof; and

(c) the ancillary benefits of the NavIC satellite system and how does the Government plan to raise financial resources through additional applications of the system?

ANSWER

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

(DR. JITENDRA SINGH):

(a) Yes Sir, the International mobile standards body 3rd Generation Partnership Project (3GPP) has approved India's regional

navigation satellite system, NavIC as a work item (No. 850072) "Support for NavIC Navigation Satellite System for LTE",

(b) 3GPP Technical Specifications Group – Radio Access Network (RAN) has introduced assisted-GNSS support in cellular positioning system since Release 7. Since then, the GPS of USA, GLONASS of Russia, GALILEO of European Union, and BeiDou of China have been included in the assisted-GNSS specifications.

As a service provider of NavIC, ISRO is working for the finalisation of NavIC parameters through TSDSI (Telecommunications Standards Development Society, India) and would successfully include NavIC in the upcoming 16th release of 3GPP expected to be in vogue from mid-2020.

With this, NavIC will be part of assisted-GNSS (along with GPS, GLONASS, GALILEO and BEIDOU) being used extensively by cellular positioning system used by the telecom service providers (viz., BSNL, AIRTEL, VODAFONE-IDEA, JIO).

(c) Ancillary benefits of NavIC Satellite System in the areas of civil applications viz., vehicle tracking, asset tracking, and scores of location based mobile phone applications are being made available for use by common citizens.

Currently, the GPS/GLONASS/BEIDOU/GALILEO signals are offered free of cost for all the above applications.

Similarly, NavIC system is offered free of cost. As an initiative towards "Make In India", ISRO is providing technical consultancy to the prospective Indian industry capable of manufacturing chipsets and devices for using NavIC signals. Adopting NavIC in all the location based solutions will reduce dependence on foreign system and devices.

Also, as a spin off development, NavIC system is used in Safety of Life for fishermen by disseminating disaster warning alerts through NavIC broadcast messaging system in remote locations (high sea) where there is no communication connectivity.

The above applications using indigenously developed system will enhance the socio-economic status of our country.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 550

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 05, 2020

GSAT-30

550 SHRI SHANKAR LALWANI:

SHRIMATI QUEEN OJA:

DR. BHARATIBEN DHIRUBHAI SHIYAL:

Will the PRIME MINISTER be pleased to state:

(a) whether preparations to launch GSAT-30 satellite are going on;

(b) if so, the likely benefits of the satellite; and

(c) the time by which the services of the said satellite is likely to be received along with 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) GSAT-30 satellite, with a lift-off mass of 3357 kg, was successfully launched from French Guiana onboard Ariane-5 launch vehicle on January 17, 2020.

(b) GSAT-30 satellite is meant to provide continuity of services at 83°E location to 28 different users from both Government and non-Government category utilizing the capacity for DTH, TV Up-linking / Teleport, DSNG and VSAT applications.

(c) It is planned to start operational services on GSAT-30 satellite from the first week of February, 2020 after completion of In-orbit Tests of communication payload.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 583

TO BE ANSWERED ON WEDNESDAY, FEBRUARY 05, 2020

ISRO DEVELOPING TECHNOLOGY

583 **MS. RAMYA HARIDAS:**

SHRIMATI POONAM MAHAJAN:

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 the 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 the 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 Sir, new technology development is a continuous activity of all ISRO centres, for designing different missions of ISRO. A list of few major innovative technologies are given below,

1. **Space Grade Li-ion cells**
2. **NavIC Messaging Receiver**
3. **Mini Synthetic Aperture Radar**
4. **Thermal Sensors**
5. **Two Channel Digital Monopulse Tracking Receiver**
6. **Optical Imaging System**
7. **Pedcoat Liner**
8. **Two way MSS Terminal**

(c) **Yes. ISRO has drawn up a long term plan for space science and research activities. The major Space science programs envisaged under this long term plan are as follow:**

- **Chandrayaan-3**
- **X-ray Polarimeter Satellite (XPOSAT)**
- **Aditya-L1**
- **Gaganyaan:**
- **Venus orbiter**
- **DISHA aeronomy missions**
- **Lunar Polar Exploration**

In addition, 17 projects under Chandrayaan-1 data utilisation and 28 projects under MOM data utilisation are identified. Under utilisation for Astrosat data, 12 more projects are selected with funding support.

(d) Yes Sir.

Space science and research to observe earth and to explore universe are technologically complex and cost intensive. No single country can carry out independently all such activities. Hence, countries pursue cooperation in space science and research to share cost, time and risk. India and Indian Space Research Organisation (ISRO) have signed bilateral cooperation arrangements with 55 countries and 5 multilateral bodies.

(e) The following programmes are in place for encouraging R&D in space science, Technology and Applications

1. Research Sponsored programme (RESPOND) which encourages any institution/Academia against list of focused areas.
2. Space Technology Cell at Premier institutions like IITs, IISC & SPPU, Pune for encouraging research by Students.
3. Regional Academic Centres for Space (RACs) at prominent Universities one in each region of East, South, West, North, Central and North East to encourage the R&D at universities.

4. Space Technology Incubation Centres at NITs one in each region of East, South, West, North, Central and North East to encourage the R&D and Innovative technologies by startups and industries in the region.
5. Proposal for identifying Space national Academic partners is in pipeline for encouraging R&D in areas of excellence through the partner.
6. ISRO centres take several R&D projects in collaboration with Academia and Research institutions for the ongoing and future ISRO programmes continuously every year.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

STARRED QUESTION NO. 181

TO BE ANSWERED ON WEDNESDAY, MARCH 04, 2020

YOUNG SCIENTISTS PROGRAMME

***181. SHRIMATI SAJDA AHMED:**

Will the PRIME MINISTER be pleased to state:

(a) whether the Indian Space Research Organisation (ISRO) has launched Young Scientist Programme;

(b) if so, the details thereof;

(c) the details of the selection procedure for rural students;

(d) whether ISRO will bear the expenditure of the participating students; 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) to (e) 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 N0.181 REGARDING "YOUNG SCIENTISTS PROGRAMME" ASKED BY SHRIMATI SAJDA AHMED FOR ANSWERING ON WEDNESDAY, MARCH 04, 2020.

(a) **Yes Sir, ISRO has launched a programme called Young Scientist Programme.**

(b) **Indian Space Research Organisation (ISRO) is conducting a special programme for school students called Young Scientist Programme (YUva VIgyani KAryakram – YUVIKA) from the year 2019 onwards. 3 students each from every State/ Union Territory, studying in 9th Standard are selected for this programme through online registration. The two week long programme is primarily aimed at imparting basic knowledge on space technology, space science and space applications to the students with the intent of arousing their interest in the emerging areas of space activities.**

(c) **The selection is based on the 8th Standard academic performance and achievements in extracurricular activities including sports. An additional weightage of 15% is given to the students, who are studying in the schools located in rural area.**

(d) & (e)

Expenditure towards the travel of student (to the reporting centre and back), course material, lodging and boarding etc., during the entire course is borne by ISRO.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2259

TO BE ANSWERED ON WEDNESDAY, MARCH 04, 2020

CHANDRAYAAN-III

2259. SHRI RAVIKUMAR D.:

Will the PRIME MINISTER be pleased to state:

(a) the tentative time schedule of the Chandrayaan – III mission;

(b) the details of lessons learnt from the failure of Chandrayaan – II; and

(c) the current status of the Indian Human Spaceflight Programme?

ANSWER

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

(DR. JITENDRA SINGH):

(a) The tentative launch schedule for Chandrayaan – III is first half of 2021.

(b) Chandrayaan – III mission has been configured based on the lessons learnt from Chadrayaan – II. The revised configuration takes care of the robustness in design, capacity enhancement for mission flexibility and at the same time retained the heritage of Chandrayaan– II to the extent possible.

(c) **The status of Gaganyaan programme :**

Hardware realization has commenced for ground test and first unmanned mission. Space flight training of 4 astronaut candidates commenced. National collaboration for design, development and delivery of human centric products such as Crew medical kit, Crew health monitoring system, Emergency survival kit, Dosimeters, Earmuffs and Fire suppression system has started. A 3-week training programme for Flight surgeon was completed at ISRO with participation of CNES, France.

Four Biological and two physical science related microgravity experiments from academic institutions are shortlisted for unmanned mission of Gaganyaan programme.

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GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2765
TO BE ANSWERED ON WEDNESDAY, MARCH 11, 2020

SPACE DEBRIS

2765 SHRI PINAKI MISRA:

Will the PRIME MINISTER be pleased to state:

(a) whether the Ministry maintains a repository of the space debris being generated;

(b) if so, the details thereof;

(c) if not, whether the Government prop oses to create such a repository and if so, the details thereof;

(d) whether there is any plan to tackle the problem of growing space debris floating around the earth's orbit, as these debris could interfere with the launch of new satellites or collide with already functioning satellites in space; 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) Yes Sir, ISRO does maintain a repository of the space debris being generated.

(b) ISRO Space Situational Assessment 2019 was created, providing details of Indian space objects including operational spacecraft, non-functional spacecraft, rocket bodies and fragments. This report also contains the details of mitigation measures taken by ISRO in 2019 with regard to Space Debris to safeguard our space assets.

(c) Does not arise.

(d) & (e)

ISRO has been following UN guidelines for the mitigation of space debris threats to safeguard Indian space assets. Day-to-day analysis is carried out to assess the collision threats, and in case of critical collision threat, maneuvers are designed and carried out after proper analysis.

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GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 2934
TO BE ANSWERED ON WEDNESDAY, MARCH 11, 2020

HOMEGROWN SATELLITES

2934 SHRI INDRA HANG SUBBA:

SHRI RITESH PANDEY:

Will the PRIME MINISTER be pleased to state:

(a) whether India's space agency planned to build 17 homegrown satellites in 2019 and it, however, managed to deliver only about half due to shortage of electronic parts;

(b) if so, the details thereof;

(c) whether the absence of a robust homegrown electronics ecosystem is hurting the ambitious targets set by the Indian Space Research Organisation (ISRO) which has lined up more than 60 missions over the next five years; and

(d) if so, the details thereof and the remedial 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) & (b)

No, it is not true that ISRO could not deliver the targeted number of satellite in 2019 merely due to shortage of electronic parts.

(c) The challenge in timely launch of satellites is multi-faceted and has many reasons. The shortage of electronic components is only one of these reasons. Other reasons are

- Patented and monopolistic manufacturer driven technologies associated with parts, components and devices
- Design changes required to make the system more robust and based on on-orbit observations – this is an evolving process during the course of a particular satellite project
- Configuration changes required in response to updates in the user requirements
- Technical issues related to the manufacture of hardware
- Technical issues faced in the course of assembly, integration and testing of hardware
- Obsolescence of parts, components or materials

(d) The remedial steps taken by the department towards a robust homegrown electronics ecosystem are as follows:

- Development of indigenous vendors capable of design, fabrication and testing of hi-tech electronics hardware
- Fostering an environment conducive for transfer of technology from within ISRO to Indian industry

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GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 3928
TO BE ANSWERED ON WEDNESDAY, MARCH 18, 2020

REUSABLE LAUNCH VEHICLE

3928. SHRI GNANATHIRAVIAM S.:

Will the PRIME MINISTER be pleased to state:

(a) the current status of the Reusable Launch Vehicle (RLV) programme and the details thereof;

(b) whether the RLV is capable of making an orbital re-entry and if so, the details thereof;

(c) whether the RLV has been certified for human spaceflight; and;

(d) if so, the details thereof including the proposed date of the first crewed RLV launch?

ANSWER

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

(DR. JITENDRA SINGH):

(a) ISRO has successfully developed a technology demonstration version of a winged-body vehicle, that is, 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.

(b) Yes, Sir. RLV is designed for orbital re-entry and autonomous runway landing. This will be demonstrated in the orbital re-entry experimental flight, wherein an Orbital Re-entry Demonstration Vehicle will be boosted to orbit using existing propulsion systems followed by re-entry & landing.

(c)&(d)

The Development of Reusable Launch Vehicle is a technical challenge and it involves development of many cutting edge technologies. A series of technology demonstration missions would be required before it is made operational. Present version of RLV is not designed for human spaceflight.

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GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 3939
TO BE ANSWERED ON WEDNESDAY, MARCH 18, 2020

EARTH OBSERVATION SATELLITES

3939. SHRI KRIPANATH MALLAH

DR. KALANIDHI VEERASWAMY:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government is planning to launch some Earth Observation Satellites within the country;

(b) if so, the details thereof;

(c) the details of the funds estimated for this;

(d) the details of the targets set; and

(e) the time by which these are 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, Government is planning to launch 10 Earth Observation Satellites in 2020-21, the details of which are as follows: OCEANSAT-3, GISAT-2, RISAT-2A, HRSAT-1/2/3, CARTOSAT-3A, INSAT-3DS, RISAT-1B, OCEANSAT-3A

(b) to (e)

The funds required for these projects have been estimated as Rs. 701.5 Cr.

A target of launching up to 10 earth observation satellites has been set for the fiscal year 2020-21.

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GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 4064
TO BE ANSWERED ON WEDNESDAY, MARCH 18, 2020

SPACE MISSIONS OF ISRO

4064. SHRI K. MURALEEDHARAN:

Will the PRIME MINISTER be pleased to state:

(a) Whether Indian Space Research Organisation (ISRO) will send up an unusually large number of 10 earth observation satellites during 2020-21 and if so, the details thereof;

(b) whether ISRO has also planned 36 missions for the next fiscal and if so, the details thereof;

(c) whether during the current fiscal six out of 17 missions will be completed before 31.3.2020; 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, the target for the fiscal year 2020-21 is 10 earth observation satellites. Details are as follows: OCEANSAT-3, GISAT-2, RISAT-2A, HRSAT-1/2/3, CARTOSAT-3A, INSAT-3DS, RISAT-1B, OCEANSAT-3A.

(b) The target for the fiscal year 2020-21 is 36 missions including satellites and launch vehicles. Details of the missions are as follows:

- Earth observation satellite 10
- Communication satellite 3
- Navigation satellite 2
- Space science satellite 3
- Technology Demonstration 1
- PSLV 10
- GSLV MK II 3
- GSLV MK III 1
- Small Satellite Launch Vehicle 2
- Gaganyaan (Unmanned) 1

(c) & (d)

During the current fiscal year of 2019-20, till date 11 out of the total targeted missions have been completed. Details of which are as follows:

- Earth observation satellite 4
- Communication satellite 1
- Space science satellite 1
- PSLV 4
- GSLV MK III 1

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GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 4071
TO BE ANSWERED ON WEDNESDAY, MARCH 18, 2020

LAUNCHING SATELLITES

4071. MS. LOCKET CHATTERJEE:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government is working in collaboration with other countries to launch their satellites in space and if so, the details thereof; and

(b) whether the Government has taken any steps to promote other countries to work in collaboration with India in launching their satellites 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 Sir. Indian Space Research Organisation (ISRO) through NewSpace India Limited (NSIL), a Govt. of India company under Department of Space (DOS), has been engaged with international space agencies/ companies for launching their satellites into space, on a commercial basis, using India's Polar Satellite Launch Vehicle (PSLV).

(b) Yes Sir. Over the years, steps taken towards launching of satellites of other countries from India using Indian launch

vehicle, has enabled greater participation and involvement of several countries in availing such launch opportunities.

Since 1999, India's Polar Satellite Launch Vehicle has been involved in launching satellites of other countries into space from its spaceport located at Satish Dhawan Space Centre (SDSC), Sriharikota.

As on date, a total of 319 foreign satellites of 33 countries have been successfully launched on-board PSLV. In the coming months, many more satellites of other countries will be launched into space from India.

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GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

LOK SABHA

UNSTARRED QUESTION NO. 4105
TO BE ANSWERED ON WEDNESDAY, MARCH 18, 2020

NEW SPACE OBJECTS

4105. SHRI HEMANT TUKARAM GODSE:

Will the PRIME MINISTER be pleased to state:

(a) whether the Government has made any proposal regarding search for life on new space objects and other planets;

(b) if so, the details thereof;

(c) whether the Government has any scheme to promote new research works in space science;

(d) if so, the details thereof; and

(e) the details of the funds spent on space sector along with the new techniques patented during the last three years and 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) No Sir.

(b) Does not arise.

(c) Yes Sir.

(d) ISRO encourages new research using data from ISRO's space science missions. Announcement of Opportunities are published on ISRO webpage soliciting proposals for funds for research from Indian scientific community.

(e) The details of funds spent on Space sector during the last three years and the current year (RE figure) are provided in the table below:

Sl. No	Budget Year	Actual Expenditure (₹ in Crores)
1	2016-17	8,040.00
2	2017-18	9,130.57
2	2018-19	11,192.66
4	2019-20	13,139.26*

*RE 2019-20 figure

Details of the patents granted in the last three years and current year:

Year	No. of Patents
2016-17	15 Nos.
2017-18	08 Nos.
2018-19	17 Nos.
2019-20	19 Nos.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 607

TO BE ANSWERED ON THURSDAY, FEBRUARY 06, 2020

SOLAR MISSION ADITYA-L1

607. DR. ASHOK BAJPAI:

Will the PRIME MINISTER be pleased to state:

(a) Whether project solar mission Aditya –L1 is in progress as per schedule and shall be launched in the year 2020 to study sun's corona;

(b) if so, the details thereof; and

(c) 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, the solar mission Aditya- L1 is in progress as per schedule for launch in the year 2020 to study Sun's corona.

(b) The details of the project are as follow,

I. Five instruments to be flown are under Test and Evaluation

II. Two instruments to be flown are in integration phase.

III. All other structural elements, sensors and actuators are realized.

(c) In view of (a) above, does not arise.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 608

TO BE ANSWERED ON THURSDAY, FEBRUARY 06, 2020

SETTING UP OF NEW ROCKET LAUNCH PADS BY ISRO

608. SHRI SANJAY SETH:

Will the PRIME MINISTER be pleased to state:

(a) the details of number of rocket launch pads that Indian Space Research Organisation possess;

(b) whether Government is planning to set up a new rocket launch pad intended to be used for future Indian rocket launches from India both for domestic as well as International customer;

(c) if so, whether Government has identified the place and State for this purpose;

(d) the time by when this new rocket launch pad will be made operational; and

(e) if so, the number of domestic and foreign satellites to be launched and revenue to be earned?

ANSWER

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

(DR. JITENDRA SINGH):

(a) The Indian Space Research Organisation has established two launch pads – the First Launch Pad (FLP) and the Second Launch Pad (SLP), which is located at Satish Dhawan Space Centre, Sriharikota.

(b) & (c)

Government has proposal to set up rocket launching pad for launching Small Satellite Launch Vehicle (SSLV) near Kulasekarapattinam in the State of Tamil Nadu.

(d) Once the acquisition of land through Government of Tamil Nadu is completed, the launch pad at the new site is expected to take 18 months to become operational.

(e) The development of Small Satellite Launch Vehicle (SSLV) is in progress and will become operational after the completion of 3 developmental flights. No. of satellites to be launched and the revenue generated thereof are subject to the prevailing space market scenario at that point of time.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 1719

TO BE ANSWERED ON THURSDAY, MARCH 05, 2020

FIRST UMMANNED TEST MISSION BY ISRO

1719. SHRI A. K. SELVARAJ:

Will the PRIME MINISTER be pleased to state:

(a) whether the Indian Space Research Organisation is planning to fly the first unmanned test mission ahead of its ambitious crewed Gaganyaan mission by the end of 2020;

(b) whether it is a fact that the ISRO hopes to complete the 100th Mission of its reliable workhorse Polar Satellite Launch Vehicle by 2024;

(c) whether it is also a fact that the ISRO also plans to have 12 missions of the PSLV in 2020; 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, first unmanned test flight is scheduled ahead of crewed Gaganyaan mission.

(b) Yes, Sir. ISRO is targeting to complete the 100th Mission of Polar Satellite Launch Vehicle (PSLV) by 2024 with 10-12 PSLV launches per year.

(c) & (d)

As of now, ISRO has planned 10 missions of PSLV in 2020, which include the launch of 8 earth observation satellites [RISAT-2BR2, RISAT-1A, Oceansat-3, RISAT-2A, HRSAT (3 Nos.), CARTOSAT-3A], 1 communication satellite [GSAT-12R] & 2 Space Science satellites [Aditya-L1, XPosat] and one dedicated commercial mission.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 1720

TO BE ANSWERED ON THURSDAY, MARCH 05, 2020

FEMALE HUMANOID ROBOT FOR SPACE MISSION

1720. SHRI S. MUTHUKARUPPAN:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that India has unveiled a female humanoid robot which it plans to send into space in 2020 as part of an unmanned mission;

(b) if so, the details thereof;

(c) whether it is also a fact that ISRO would be taking active steps to recruit more women and include them on ultra visible mission like Gaganyaan; 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, ISRO is planning to send a half humanoid, onboard unmanned mission of Gaganyaan Programme.

(b) The half humanoid will be capable of operating switches and recognize voice commands. The current prototype is capable of speaking one language and flight model will speak two languages.

(c) In the Scientists/Engineers category, ISRO does recruitment of the candidates purely based on merit and foster them based on their contributions, achievements, etc. In the case of recruitments towards Gaganyaan Programme also similar policy, inline with GOI guidelines is adopted.

(d) Does not arise.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2192

TO BE ANSWERED ON THURSDAY, MARCH 12, 2020

RESEARCH AND DEVELOPMENT OF SPACE TECHNOLOGY AND APPLICATIONS

2192. SHRI PARTAP SINGH BAJWA:

Will the PRIME MINISTER be pleased to state:

(a) The total number of satellites with sea surface temperature sensors launched in the year 2019-20;

(b) the total number of launches of the PSLV and GSLV MK III vehicles during the year 2019-20;

(c) the total number of Maps released during the year 2019-20; and

(d) the total number of INSAT satellites launched during the budget year 2019-20?

ANSWER

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

(DR. JITENDRA SINGH):

(a) ISRO/Department of Space has not launched any satellite with sea surface temperature sensor in the year 2019-20.

(b) During 2019-20, 4 PSLVs and 1 GSLV MK-III M1 was launched.

(c) As part of National Mission/ User projects, more than 11,000 maps have been released during 2019-20.

(d) GSAT-30 Spacecraft is one communication satellite which launched in the budget year 2019-20. This was launched on 17th Jan 2020.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2193

TO BE ANSWERED ON THURSDAY, MARCH 12, 2020

PROGRESS TO LAUNCH GISAT-1 AND CHANDRAYAAN 3

2193. SHRI B. LINGAIAH YADAV:

Will the PRIME MINISTER be pleased to state:

(a) Whether ISRO made progress and preparations to launch GISAT-1 and also for Chandrayaan-3; and

(b) If so, the details thereof and progress made?

ANSWER

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

(a) & (b) GISAT-1 satellite is the next immediately planned launch for ISRO. Chandrayaan-3 configuration has been finalized. Hardware realizations are in progress. Launch is planned in the year 2021.

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O.I.H

GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2194

TO BE ANSWERED ON THURSDAY, MARCH 12, 2020

SPACE CRAFTS LAUNCHED BY THE COUNTRY

2194. SHRI. LAL SINH VADODIA:

Will the PRIME MINISTER be pleased to state:

(a) The year-wise number of the space crafts launched by the space centres in the country between 2016-17 to 2019-2020 and till date;

(b) the year-wise number of spacecrafts launched by the country for domestic use; and

(c) the year-wise and country-wise number of spacecrafts launched for other countries?

ANSWER

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

(DR. JITENDRA SINGH):

(a) Year wise number of spacecrafts launched between 2016-17 till date are as follows:

Sl. No.	Year	No. of spacecraft
1.	2016-2017	135
2.	2017-2018	67
3.	2018-2019	40
4.	2019-2020 (Till date)	56

(b) Year-wise number of spacecrafts launched by the country for domestic use are as follows:

Sl. No.	Year	No. of spacecraft
1	2016-2017	13
2	2017-2018	9
3	2018-2019	8
4	2019-2020 (Till date)	6

(c) Year-wise and country-wise number of spacecrafts launched for other countries are as follows:

Sl. No	Year	Total No. of Spacecraft launched	Country	Nos. Of Spacecraft
1	2016-17	122	Indonesia	1
			Algeria	3
			Canada	3
			Germany	1
			Israel	1
			Kazakhstan	1
			Netherlands	1
			Switzerland	1
			UAE	1
			USA	109
2	2017-18	57	Japan	1
			Austria	1
			Belgium	3
			Canada	1
			Chile	1
			Czech Rep	1
			Finland	2
			France	2
			Germany	1
			Italy	3
			Latvia	1
			Lithuania	1
			Rep of Korea	5
			Slovakia	1
			UK	4
			USA	29
3	2018-19	32	UK	2
			Australia	1
			Canada	1
			Columbia	1
			Finland	1
			Malaysia	1
			Netherlands	1
			Spain	1
			USA	23
4	2019-20	50	Lithuania	2
			Israel	1
			Italy	1
			Japan	1
			Spain	1
			Switzerland	1
			USA	43

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2996

TO BE ANSWERED ON THURSDAY, MARCH 19, 2020

LAUNCHING OF MANNED SATELLITE TO MOON

2996. SHRI T. G. VENKATESH:

DR. SASMIT PATRA:

Will the PRIME MINISTER be pleased to state:

(a) the details of Government's intention to launch India's first manned satellite to the moon as part of ISROs Gaganyaan Mission;

(b) the status of the project as on date; and

(c) the details of the steps being taken by Government for an early launch of the satellite?

ANSWER

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

(a) & (b)

No Sir, the Government does not intend to launch first manned satellite to the moon as part of Gaganyaan mission. 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.

The status of ongoing Gaganyaan programme is as follows:

1. **Engineering systems:** Requirements and design finalized for Launch vehicle, Orbital module, Crew escape system and ground infrastructure. Hardware realization has commenced for ground test and first unmanned mission.

2. **Crew Management:** Space flight training of 4 astronaut candidates commenced. Requirements of crew recovery from sea post touchdown is finalised including roles and responsibility of supporting agencies.

3. **National collaboration:** MoUs with DRDO labs have been signed for design, development and delivery of human centric products such as Crew medical kit, Crew health monitoring system, Emergency survival kit, Dosimeters, Earmuffs and Fire suppression system.

4. **International collaboration:**

a) Contracts signed with M/s JSC Glavkosmos, Russia for 1) Selection support, Medical Examination and training of Indian Astronauts. 2) Wind tunnel testing for Crew Module and Crew escape system. 3) Feasibility studies for usage of Soyuz ECLSS components in Gaganyaan. 4) Delivery of view port for Gaganyaan crew module.

b) A 3-week training programme for Flight surgeon was completed at ISRO with participation of CNES, France.

5. **Space Science:** 4 Biological and 2 physical science related microgravity experiments from academic institutions are shortlisted for unmanned mission of Gaganyaan programme.

(c) Launch of Gaganyaan is planned by the end of 2022.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2997

TO BE ANSWERED ON THURSDAY, MARCH 19, 2020

EARTH OBSERVATION SATELLITES

2997. SHRI A. MOHAMMEDJAN:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that the Indian Space Research Organisation (ISRO) will send up an unusually large number of 10 earth observation satellites during 2020-21;

(b) whether it is also a fact that ISRO has also planned 36 missions for next fiscal;

(c) whether during the current fiscal, six out of 17 missions will be completed before 31st March, 2020; 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, the target for the fiscal year 2020-21 is 10 earth observation satellites.

(b) Yes Sir, the target for the fiscal year 2020-21 is 36 missions including satellites and launch vehicles. Details of the missions are as follow:

- Earth observation satellite 10
- Communication satellite 3
- Navigation satellite 2
- Space science satellite 3
- Technology Demonstration 1
- PSLV 10
- GSLV MK II 3

- GSLV MK III 1
- Small Satellite Launch Vehicle 2
- Gaganyaan (Unmanned) 1

(c) & (d)

During the current fiscal year of 2019-20, till date 11 out of the total targeted missions have been completed. Details of which are as follows:

- Earth observation satellite 4
- Communication satellite 1
- Space science satellite 1
- PSLV 4
- GSLV MK III 1

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2998

TO BE ANSWERED ON THURSDAY, MARCH 19, 2020

PRIME MINISTER'S VISION FOR INDIAN SPACE PROGRAMME

2998. SHRI SASMIT PATRA:

Will the PRIME MINISTER be pleased to state the details of his vision for Indian Space Programme?

ANSWER

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

Indian Space Programme is focused on peaceful uses of Outer Space. Towards this, Space Technology should be used for benefit of the country and society, provide solutions for developmental activities and address problems of the society at large. It should be used as tool for planning, monitoring & evaluation of national level projects and thereby managing natural resources.

Space Technology should also be used for enhancing the scientific temper in the country, provide means to explore space for better understanding of our universe.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 2999

TO BE ANSWERED ON THURSDAY, MARCH 19, 2020

WEB PORTAL FOR MONITORING GOVERNMENT PROJECTS

2999. SHRI SANJAY SETH:

Will the PRIME MINISTER be pleased to state:

(a) Whether Government has launched a web portal to promote better planning and monitoring of Government projects recently;

(b) if so, the details thereof along with its aims and objectives;

(c) the amount of funds being allocated by Government for the said purpose;

(d) the details of challenges faced by Government during the said initiatives; and

(e) the other steps taken by 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 Sir, a web based software has been developed in-house for monitoring of Launch Vehicle & Spacecraft related projects.

(b) The software provides status information of projects upto sub-system level. Aim is to monitor the projects and ensure that the projects are completed within stipulated schedule. The objective is to identify the criticalities, and take proactive action to mitigate any unexpected delay in the project.

(c) No separate amount was allocated for the web based software development. It was developed using available expertise within ISRO.

(d) Initial challenges were to identify activities, mapping the dependencies on external agencies (like fabricators etc.), integrating the schedule of sub-systems delivery from other ISRO Centres, on-boarding the users and change in the way of working. Now, it has stabilized to a large extent.

(e) A Dashboard prototype has been developed for high level monitoring.

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GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

RAJYA SABHA

UNSTARRED QUESTION NO. 3000

TO BE ANSWERED ON THURSDAY, MARCH 19, 2020

SPACE PROGRAM OF INDIA VIS-À-VIS CHINA

3000. SHRI P.L. PUNIA:

Will the PRIME MINISTER be pleased to state:

(a) whether India is lagging behind China in space research/ programmes;

(b) if so, the details of the achievements made by China vis-à-vis India in space programmes; and

(c) the action plan proposed to further India's achievements in space research?

ANSWER

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

(DR. JITENDRA SINGH):

(a) & (b)

Space activities for any country are governed by its own needs and priorities. These needs originate from various parameters, i.e. technical capability, scientific interest, economic status, geographical and climatic conditions etc. Therefore in absence of proper common platform for comparison, it is difficult to comment on leading and lagging country. While China has better achievements in certain areas, at the same time India too has performed far better in some other fields in line with its national priorities.

(c) India is working on many futuristic projects in the field of Earth observation, Communications, Navigation, Space Science and Propulsion Systems to further its achievements in space research

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