

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE**

**LOK SABHA
UNSTARRED QUESTION NO.588**

TO BE ANSWERED ON WEDNESDAY, NOVEMBER 20, 2019

LAUNCH OF CHANDRAYAAN-II

588. SHRI KIRTI VARDHAN SINGH:

Will the PRIME MINISTER be pleased to state:

- (a) the cost incurred on the launch of Chandrayaan-II;**
- (b) whether the launch was successful taking in view the various research on Moon which was planned by the scientists of ISRO and if so, the details thereof; and**
- (c) the reasons for the failure of the Vikram Lander to land smoothly on the surface of the Moon?**

ANSWER

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

(DR. JITENDRA SINGH):

- (a) The approved cost of Chandrayaan-II Project is Rs. 603 Crore (excluding launch cost). Chandrayaan-II was launched on-board the GSLV MK III M1. The cost of GSLV MK III M1 vehicle is Rs. 367 Crore.**
- (b) & (c) Chandrayaan-II Spacecraft was successfully launched. The objectives of Chandrayaan-II Mission were:**
 - 1. Scientific studies through payloads on-board the orbiter**

2. Technology demonstration of soft landing and roving on the lunar surface

The indigenously developed Chandrayaan-2 spacecraft comprising of Orbiter, Lander and Rover was successfully launched on-board indigenous GSLV MK III-M1 Mission on 22nd July 2019. After accomplishing four earth bound maneuvers and Trans Lunar Injection, the spacecraft was successfully inserted into the Lunar orbit on 20th August 2019. A series of moon bound maneuvers were then carried out to achieve a Lunar orbit of 119x127 km. The Lander 'Vikram' was separated, as planned, from the Orbiter on 2nd September 2019. After two successful de-orbiting maneuvers, powered descent of the Lander was initiated on 7th September 2019 to achieve soft landing on the moon surface.

The first phase of descent was performed nominally from an altitude of 30 km to 7.4 km above the moon surface. The velocity was reduced from 1683 m/s to 146 m/s. During the second phase of descent, the reduction in velocity was more than the designed value. Due to this deviation, the initial conditions at the start of the fine braking phase were beyond the designed parameters. As a result, Vikram hard landed within 500 m of the designated landing site.

Most of the components of Technology demonstration, including the launch, orbital critical maneuvers, lander separation, de-boost and rough braking phase were successfully accomplished. With regards to the scientific objectives, all the 8 state of the art scientific instruments of

the Orbiter are performing as per the design and providing valuable scientific data. Due to the precise launch and orbital maneuvers, the mission life of the Orbiter is increased to 7 years. The data received from the Orbiter is being provided continuously to the scientific community. The same was recently reviewed in an all India user meet organized at New Delhi.
