

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 4546
TO BE ANSWERED ON 14.12.2016

EUROPEAN ORGANISATION FOR NUCLEAR RESEARCH

4546. SHRI ADHALRAO PATIL SHIVAJIRAO:
SHRI VINAYAK BHAURAO RAUT:
DR. SHRIKANT EKNATH SHINDE:
SHRI B. VINOD KUMAR:
SHRI SHRIRANG APPA BARNE:
SHRI ANANDRAO ADSUL:
SHRI J.J.T. NATTERJEE:
SHRI DHARMENDRA YADAV:

Will the PRIME MINISTER be pleased to state:

- (a) whether the European Organisation for Nuclear Research (CERN) is the world's largest nuclear and particle physics laboratory, where scientists and engineers are probing the fundamental structure of universe by using the most sophisticated scientific instruments and advanced computing systems;
- (b) if so, whether Indian scientists have been involved in all pioneering activities at CERN in recent years and if so, the facts in this regard;
- (c) whether India has made significant contributions to the construction of the Large Hadron Collider (LHC) and if so, the details thereof;
- (d) whether CERN has signed an agreement making India an Associate Member State of CERN and if so, the details thereof; and
- (e) the extent to which the same will open opportunities for Indian industries to participate directly in the CERN project?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (Dr. JITENDRA SINGH):

- (a) Yes, Sir.
- (b)&(c) In recent years, Indian scientists have been involved in all pioneering activities at CERN. India has made significant contributions to the construction of the Large Hadron Collider (LHC), in the areas of design, development and supply of hardware accelerator components/systems and

its commissioning and software development and deployment in the machine. India is one of the leading partners in the ALICE experiment, which is on a quest to unearth the physics of quark-gluon plasma (QGP) and to get a glimpse of how matter behaved within a few microseconds after the birth of the Universe. The discovery of the Higgs Boson at the LHC is the most talked about scientific discovery in recent memory. Indian scientists have played a significant role in the Compact Muon Solenoid (CMS) experiments, which is one of the two large experiments that have led to the discovery of the Higgs Boson. Indian scientists have been named as part of this historic discovery. This helps India in participating in the high end technology related to high energy accelerators. It is noteworthy to mention the involvement of Indian scientists in high-tech particle detectors and electronics research, ISOLDE (Isotope Separator On Line Device) and n-TOF (neutron Time of Flight) experiments, and various application oriented programs including medical imaging. In the field of large-scale computing, India has made major contributions in terms of designing, developing and deploying software for the Worldwide Large Hadron Collider Computing Grid (WLCG). It is worth mentioning that the grid Tier-2 centres established at Variable Energy Cyclotron Centre (VECC), Kolkata and Tata Institute of Fundamental Research (TIFR), Mumbai have provided the pledged resources and are operating with 96% uptime, thereby facilitating running of computational jobs by various CERN collaborations.

- (d) An agreement has been signed on 21.11.2016 between India and the European Organisation for Nuclear Research (CERN) concerning the granting of the status of Associate Member at CERN.
- (e) Associate Membership entitles Indian industry to participate directly in all CERN related activities. This will lead to enhancement of high technology development expertise in the country, which will in turn be beneficial to DAE and other scientific departments in the country for their future programmes in the related areas.
