

National Technology Day 2023

May 11, 2023 • vajiramandravi.com



What's in today's article?

- **Why in news?**
- **What is National Technology Day?**
- **News Summary: National Technology Day - PM to virtually lay LIGO foundation stone today**
- **Key scientific projects to be unveiled**
- **LIGO - India**
- **Rare Earth Permanent magnet Plant in Visakhapatnam**
- **The Molybdenum-99 production facility**
- **The National Hadron Beam Therapy Facility**

Why in news?

- Today, on National Technology Day, PM Modi will lay the foundation stone of Laser Interferometer Gravitational Wave Observatory – India (LIGO-India).
- The LIGO-India facility is being constructed in Hingoli district in Maharashtra.

What is National Technology Day?

- **About**

- National Technology Day is observed annually on May 11 in India.
- This day is observed to commemorate the significant achievements and contributions made by Indian scientists, engineers, and technologists towards nation building.
- It is celebrated with a new and different theme every year.

- **History**

- The celebration of this day was started in 1999 to honour Indian scientists, engineers and technologists, who ensured the successful conduct of Pokhran tests in May 1998.
- On May 11, 1998, India successfully conducted its first nuclear tests under Pokhran-II, codenamed **Operation Shakti**.
 - The series of nuclear tests marked a major milestone in India's technological prowess and showcased its capability to develop and deploy nuclear weapons.

- **Objective**

- The primary objective of National Technology Day is to promote scientific temper and inspire the younger generation to pursue careers in STEM (science, technology, engineering, and mathematics) fields.
- It serves as an occasion to raise awareness about the importance of technology in addressing societal challenges and fostering economic growth.

- **Theme for 2023**

- This year's theme is '***School to Startups- Igniting Young Minds to Innovate***'.

News Summary: National Technology Day - PM to virtually lay LIGO foundation stone today

- PM Modi will inaugurate the programme marking National Technology Day 2023.
- Also, to mark the 25th anniversary of the 1998 nuclear tests, the Prime Minister would launch several projects of the atomic energy department.

Key scientific projects to be unveiled

- The projects whose foundation stone would be laid include:
 - Laser Interferometer Gravitational Wave Observatory - India (LIGO-India), Hingoli;
 - Homi Bhabha Cancer Hospital and Research Centre, Jatni, Odisha; and
 - Platinum Jubilee Block of Tata Memorial Hospital, Mumbai.
- The projects that will be dedicated to Nation include:
 - Fission Molybdenum-99 Production Facility, Mumbai;

- Rare Earth Permanent Magnet Plant, Visakhapatnam;
- National Hadron Beam Therapy Facility, Navi Mumbai;
- Radiological Research Unit, Navi Mumbai;
- Homi Bhabha Cancer Hospital and Research Centre, Visakhapatnam; and
- Women & Children Cancer Hospital Building, Navi Mumbai.

LIGO - India

- LIGO-India will be an advanced gravitational-wave observatory to be located in India as part of a worldwide network.
 - Two existing LIGO observatories in the United States detected gravitational waves for the first time in 2015.
 - Since then, two more similar detectors have come onboard, one in Italy and the other in Japan.
 - LIGO India would be the fifth node of this network, and possibly the last.
- The LIGO facility involves the construction of two 4-km long vacuum chambers in L-shape along with other structures. The facility is set to become operational by 2030.
 - It is set to become the largest scientific facility in India.
- This facility will be capable of sensing gravitational waves generated during the merger of massive astrophysical objects such as black holes, and neutron stars.

Rare Earth Permanent magnet Plant in Visakhapatnam

- The new magnet plant would produce rare earth magnets like Samarium-Cobalt and Neodymium-Iron-Boron.
 - This plant has been built inside an existing facility of Bhabha Atomic Research Centre (BARC) in Visakhapatnam.
- These magnets are critical components for a variety of high technology products in telecommunications, electric vehicles, microelectronics, wind turbines, airplanes and also in weapons.
- As of now, the supply chains of these magnets are highly dependent on China. India plans to use locally sourced rare earth elements to produce these magnets.
- With this plant, **India will join a select group of nations with capacity to produce such magnets**.

The Molybdenum-99 production facility

- This Facility located in Trombay Campus of Bhabha Atomic Research Centre.
- This facility is expected to enable about 9 to 10 lakh patient scans per year.
 - **Molybdenum-99** (Mo-99) decays to create **technetium-99m** (Tc-99m), a radioisotope used by hospitals and medical centres.

- Tc-99m is used worldwide in nuclear medicine procedures to diagnose heart disease and other diseases.
 - Roughly 85% of medical imaging in nuclear medicine uses this isotope (Tc-99m).

The National Hadron Beam Therapy Facility

- The National Hadron Beam Therapy Facility of Tata Memorial Centre, Navi Mumbai works to undertake highly precise delivery of radiation to the tumour with minimal dose to the surrounding normal structures.
- The precise delivery of dose to target tissue reduces the early and delayed side effects of radiation therapy.

Q1) What is Bhabha Atomic Research Centre (BARC)?

Bhabha Atomic Research Centre (BARC) is India's premier nuclear research facility headquartered in Trombay, Mumbai. It was established in 1954 by Homi Jehangir Bhabha, a renowned Indian nuclear physicist, to conduct research and development in the field of atomic energy. BARC's primary mandate is to develop nuclear technology for peaceful applications, including power generation, medicine, agriculture, and industry.

Q2) What is Operation Shakti?

Operation Shakti was a series of five nuclear bomb tests conducted by India in May 1998 at the Pokhran test range in Rajasthan. The tests were conducted under the leadership of then-Prime Minister Atal Bihari Vajpayee and represented India's first nuclear weapons test since its "peaceful nuclear explosion" in 1974.

Source: [National Technology Day: PM to virtually lay LIGO foundation stone today](#) | [PIB](#) | [LIGO-INDIA](#) | [NDTV](#)

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