

# National Mission on Quantum Technologies & Applications (NM-QTA)

April 25, 2020

**Context:** The Union Government in its budget 2020 has announced a National Mission on Quantum Technologies & Applications (NM-QTA), the budget outlay of Rs 8000 Crore for a period of five years to be implemented by the Department of Science & Technology (DST).

## About Quantum Technology

- Quantum Technology is based on the principles of quantum theory,
- It concerns the control and manipulation of quantum systems, with the goal of achieving information processing beyond the limits of the classical world.
- Quantum principles will be used for engineering solutions to extremely complex problems in computing, communications, sensing, chemistry, cryptography, imaging, and mechanics.

## Need for the mission

- The range of quantum technologies is expected to be one of the major technology disruptions that will change the entire paradigm of computation, communication, and encryption.
- It is perceived that the countries who achieve an edge in this emerging field will have a greater advantage in garnering multifold economic growth and dominant leadership role.
- The transition of quantum science and technology from a field of active interest in research laboratories to one that can be applied in day to day life is also the

opportune moment that provides the space for many startup companies to form and develop.

## **National Mission on Quantum Technologies & Applications (NM-QTA)**

- The next-generation transformative technologies that will receive a push under this mission include quantum computers and computing, quantum communication, quantum key distribution, encryption, cryptanalysis, quantum devices, quantum sensing, quantum materials, quantum clock and so on.
- Mission draws upon the existing deep strengths within academic institutes across India to support interdisciplinary research projects in key verticals involving quantum technology, while simultaneously developing key foundational strengths in important core areas.
- The Mission will be able to address the ever-increasing technological requirements of the society and take into account the international technology trends and road maps of leading countries for the development of next-generation technologies.



## **Significance of the Mission**

- Implementation of the mission would help develop and bring quantum computers secured communications through fiber and free space, quantum encryption and cryptanalysis and associated technologies within reach in the country and help address India's specific national and regional issues.
- The mission will help prepare next-generation skilled manpower, boost translational research and also encourage entrepreneurship and start-up ecosystem development.
- By promoting advanced research in quantum science and

technology, technology development and higher education in science, technology and engineering disciplines India can be brought at par with other advanced countries and can derive several direct and indirect benefits.