GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
RAJYA SABHA
UNSTARRED QUESTION NO. 2201
ANSWERED ON 18/12/2025

PROMOTION OF QUANTUM TECHNOLOGIES

2201 SHRI KARTIKEYA SHARMA:

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) the steps taken by Government to promote research, development and demonstration in quantum computing and quantum technologies, including details of national missions, dedicated funding windows, testbeds or quantum-computing laboratories established at national research institutions and universities;

(b) the programmes and collaborations (domestic and international) initiated to accelerate translation of quantum research into applications-specifically mentioning public-private partnerships, industry consortia and centres of excellence that facilitate prototyping and pilot deployments; and

(c) the steps planned to build quantum-ready human resources such as fellowships, specialised courses, skilling programmes and faculty development to ensure that the country has the talented pool required to scaleup in quantum technology and indigenous commercialization?

ANSWER

MINISTER OF STATE (INDEPENDENT CHARGE) FOR THE
MINISTRY OF SCIENCE AND TECHNOLOGY & EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) The Government has taken the following steps to promote research, development and demonstration of quantum technologies:

(i) The Department of Science & Technology (DST) is implementing the National Quantum Mission (NQM) at an outlay of ₹6003.65 crore for a period of eight years. Under the Mission, four Thematic Hubs (T-Hubs) are established at IISc Bengaluru (Quantum Computing), IIT Madras in association with C-DoT (Quantum Communication), IIT Bombay (Quantum Sensing & Metrology) and IIT Delhi (Quantum Materials & Devices). These hubs support technology development including fabrication, testbeds, collaborative R&D; human resource development, entrepreneurship and industry collaboration and international collaboration across 14 Technical Groups and 17 Project Teams, involving 152 researchers from 43 institutions. NQM also supports the establishment of two major quantum-fabrication facilities at IISc Bengaluru and IIT Bombay, along with smaller facilities at IIT Delhi and IIT Kanpur, to strengthen indigenous development of quantum computing, sensing and materials technologies.

(ii) DST is also implementing the National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS), under which a Technology Innovation Hub (TIH) in Quantum Technologies is established at the Indian Institute of Science Education and Research (IISER), Pune with a sanctioned amount of ₹170 crore. The TIH focuses on

development of quantum-technology testbeds and training facilities. It has built a 20-qubit ion-trap quantum-computing system with in-house fabrication capabilities and a Quantum Technology Laboratory supporting experiments in quantum cryptography, quantum sensing, Nuclear Magnetic Resonance (NMR)–based quantum computing and quantum optics. These initiatives complement NQM by expanding national research capacity and enabling wider academic and industry participation.

(b) The Government is implementing the National Quantum Mission (NQM) to accelerate the translation of quantum research into practical applications. Under the NQM, four T-Hubs serve as national centres of excellence and anchor efforts to translate quantum research into deployable technologies. Entrepreneurship and industry engagement form a core mandate of these Hubs. NQM has issued dedicated guidelines to support quantum start-ups by providing funding, access to fabrication facilities, and expert mentorship. Eight start-ups have been supported across quantum computing, communication, sensing and materials. A rolling Call for Proposals is also launched to identify and assist start-ups and industry-led initiatives, thereby enabling technology translation, pilot deployments and the development of a robust quantum-technology ecosystem in the country. Few initiatives include strategic collaboration of IIT Bombay T-Hub on Quantum Sensing & Metrology with the Quantum Ecosystems and Technology Council of India (QETCI) for ecosystem-building, standardisation and industry engagement. The T-Hub has also signed agreements with Diamond Elements Pvt. Ltd. for lab-grown diamond development and with Excel Innovators & Integrators for commercialising nanopositioner technologies essential for quantum-sensing devices.

(c) The Government has taken various steps to develop a strong, industry-ready and research-capable workforce to support quantum R&D, innovation and indigenous commercialization. Human Resource Development (HRD) is one of the major mandates of NQM. To strengthen India's quantum talent pipeline, All India Council for Technical Education (AICTE), in collaboration with the National Quantum Mission (NQM), has introduced U.G. Minor and M.Tech programmes in Quantum Technologies, creating structured academic pathways that strengthen foundational learning and advanced specialization in the field. In addition, a national Call for Proposals for establishing Quantum Teaching Laboratories in higher-education institutions has been issued, and the proposals received are under evaluation through a transparent and rigorous review process. The Mission also supports fellowships, internships, specialized training modules and faculty-development initiatives across its T-Hubs to build capacity in quantum technologies.

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