

National Quantum Mission

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In news— The Union Cabinet has recently approved the National Quantum Mission (NQM) at a total cost of Rs.6003.65 crore from 2023-24 to 2030-31 to scale-up scientific & industrial R&D for quantum technologies.

About the mission-

- It aims to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology (QT).
- The new mission **targets developing intermediate scale quantum computers with 50-1000 physical qubits in 8 years** in various platforms like superconducting and photonic technology.
- **Satellite based secure quantum communications** between ground stations **over a range of 2000 kilometres within India, long distance secure quantum communications with other countries, inter-city quantum key distribution over 2000 km** as well as multi-node Quantum network with quantum memories are also some of the deliverables of the Mission.
- The mission will help **develop magnetometers with high sensitivity in atomic systems and Atomic Clocks** for precision timing, communications and navigation.
- It will also **support design and synthesis of quantum materials such as superconductors**, novel semiconductor structures and topological materials for fabrication of quantum devices.
- **Single photon sources/detectors, entangled photon sources will also be developed** for quantum communications, sensing and metrological applications.
- **Four Thematic Hubs (T-Hubs) will be set up in top academic and National R&D institutes** on the domains –
 1. Quantum Computing.

2. Quantum Communication.
3. Quantum Sensing & Metrology and
4. Quantum Materials & Devices.

- **The hubs which will focus on generation of new knowledge** through basic and applied research as well as promote R&D in areas that are mandated to them.
- NQM can take the technology development eco-system in the country to a globally competitive level.
- The mission would greatly benefit communication, health, financial and energy sectors as well as drug design, and space applications.
- It will provide a huge boost to National priorities like digital India, Make in India, Skill India and Stand-up India, Start-up India, Self-reliant India and Sustainable Development Goals (SDG).