

The momentum for quantum tech. is growing rapidly across globe including India. Discuss challenges and opport. associat. with QT.

Quantum technology is the next generation technology that use the principles of quantum physics to store data and process information.

Quantum technology ~~is~~ ~~to~~ use principles such as superposition and entanglement and encodes informations using q-bits that can represent information as 0 and 1 at the same time,

Growing momentum in India

India has demonstrated keen interest in quantum technology. IIT, Delhi conducted Quantum key distribution links of more than 100 kilometers.

The Indian Space Research Organization has successfully demonstrated free space

Quantum communications of covering
300 meters.

Quantum frontier mission is a
part of PM science and technology Innovation
and Advisory Council's mission.

Overall, the adoption of the
technology there are opportunities and
challenges.

Opportunities

① Health: Quantum technology can be
used to map the protein of patients
in 3D and develop suitable treatments
and drugs.

The viral profile can be analysed
in a better way and effective vaccines
can be manufactured.

② Computing - Quantum computing can
improve the data processing rate of
the computers and complex problems

can be solved at a shorter period of time.

③ Geological - Quantum sensors can aid in mineral exploration and provide warnings about earthquakes and volcanoes.

④ Financial - financial forecasting can be improved with faster trading and ultra safe transactions.

Challenges - Bottlenecks persist such as

① Warfare. As the technology is dual use technology, military misuse of quantum technology can be of a greater threat to national security.

② Fund: Limited research funding in India - 0.7% of GDP

③ Private public gap as 92% of quantum efforts are made by government.

With a solid research base and workforce focused on quantum, the benefits ancillary are manifold which are crucial for our smart India.