India needs a holistic approach to tackle newer threats in the cyber space from quantum techniques. Explain (200words)

Quantum technology is based on the principle of quantum physics/ mechanics. It exploits some of the properties of quantum mechanics - such as quantum entanglement, superposition and tunnelling in developing application like computing and cryptography.

The advancement of quantum technique is accompanied with quantum cyber attacks.

① ↳ If technology goes in wrong hands, all the government official and confidential data will be at risk

② ↳ It will pose threat to national security as all the military

equipments, weapons and machinery are equip against conventional cyber attack.

③ ↳ It will extracts confidential information related to national security

India's initiatives Regarding Quantum technology and Security

(1) In 2018, Department of Science programme called QuEST - Quantum-Enabled Science & technology committed to investing Rs 80 cr for research

② In 2020 Budget, India announced the National Mission for Quantum Technologies and Applications (NM-QTA) for strengthening quantum industry

③ Govt. also inaugurates C-DOTs Quantum Communication Lab in 2021

④ Govt. also unveiled the indigenously developed Quantum Key Distribution (QKD) solution

• Several Indian startups such as QNu Labs Bosonq and Qulabs are also working on cryptography, computing and cyber-security.

A Comparison with China and USA

① In 2022, China developed first Quantum satellite

② China owns two of the world's first Quantum computers

③ USA has passed legislation US National Quantum Initiative and allocated $1.2 bn

The seller policy making and regulation is an overarching strategy to curb Quantum cyber. The strategic collaborations with techno-democracies for cooperations in countering Quantum cyber attack.