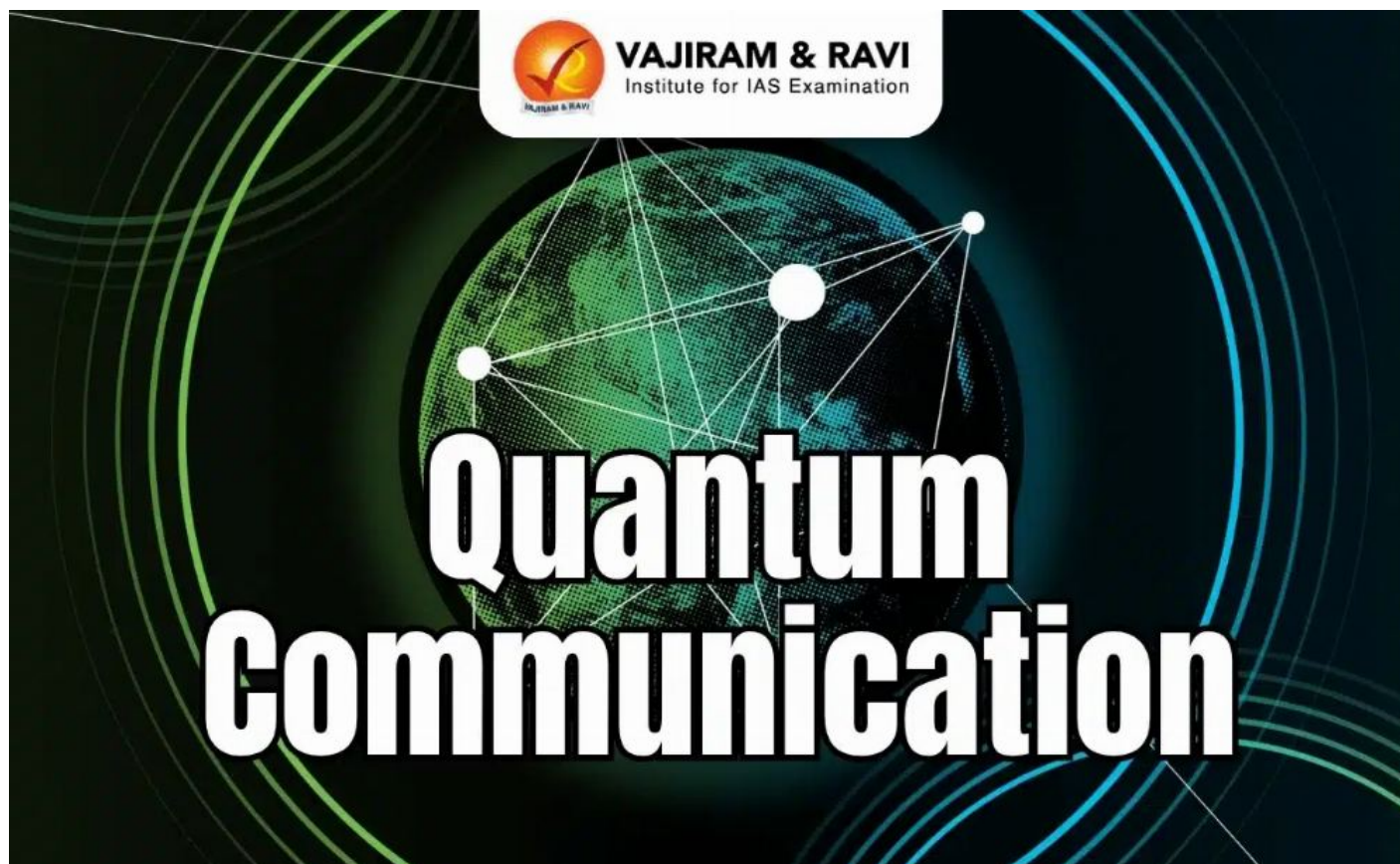


Quantum Communication

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Quantum Communication Latest News

Recently, the Ministry of Defence said in a statement that IIT-Delhi scientists together with the Defence Research and Development Organisation (DRDO) demonstrated quantum communication over a distance of more than 1 km in free space.

About Quantum Communication

- It is a way to send information using the **tinkest particles** in the universe, like light particles (**called photons**), in a super secure way.
- It is an umbrella term for any scheme that uses **the concepts of quantum physics**, but **especially entanglement**, to make a given communication channel leak-proof.
- It can be used to **create communication channels** that are protected against computational attacks since any attempt to tap the quantum channel will itself be revealed. Thus they have great value in defence settings.

- If any third party intercepts one of the photons, the other photon will immediately be disturbed as well and the **channel will be revealed as insecure**.
- An important method in quantum communication is **quantum key distribution** (QKD).
- Quantum entanglement is a strange phenomenon where two tiny particles, like photons (particles of light), become linked in such a way that whatever happens to one instantly affects the other — even if they are far apart.

Applications of Quantum Communication

- **Military and government:** It is used for transmitting **highly sensitive information**, providing secure communication channels that are immune to eavesdropping.
- **Banking:** Protects financial transactions from cyber-attacks by using quantum key distribution (QKD) to secure online banking and international transactions.
- **Power grids:** Secures communication within the power industry, safeguarding against cyber-attacks that could lead to outages or damage to the electrical grid.
- **Consumer privacy:** Enhances the security of personal data transmitted over the internet, such as in cloud services or when shopping online.
- **Scientific collaboration:** Allows secure sharing of research data between institutions, especially when dealing with proprietary or sensitive information.
- **Navigation:** Quantum communication could be used to enhance the security of signals in GPS systems, providing tamper-proof navigation data.

Source: **TH**

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