

Name _____

Quantum Computing Unveiled: A Journey into the World of Qubits and Quantum Superposition

Short Answer Key

1. Quantum computing can potentially impact cryptography by breaking current encryption methods due to its ability to perform certain calculations much faster than classical computers. This could lead to the need for new encryption techniques that are resistant to quantum attacks.
2. Entanglement in quantum computing is when the states of qubits become linked in such a way that the state of one qubit instantly affects the state of another, even if they are far apart. It is significant because it allows for ultra-fast communication and coordination between qubits, which can be used in quantum computing operations.
3. Some challenges and limitations of quantum computing include error rates due to sensitivity to environmental factors, scalability issues in building large-scale quantum computers, high development and maintenance costs, and a shortage of quantum programmers with the required skill set.
4. Quantum superposition allows quantum computers to perform calculations differently from classical computers by enabling qubits to exist in multiple states at once until measured. This allows quantum computers to perform certain calculations in parallel, making them potentially much faster for specific tasks.
5. Quantum gates in quantum computing are analogous to classical logic gates in traditional computers. They manipulate qubits to perform various operations, such as changing a qubit's state, entangling qubits, or performing mathematical operations.

