

Name _____

Quantum Computing's Ethical and Societal Impact

Open-Ended Response Answer Key

1. The ethical dilemma related to the potential weaponization of quantum computing technology revolves around the responsibility of governments and organizations in using this powerful technology. International agreements and regulations can mitigate this concern by setting standards for the peaceful use of quantum technology, ensuring transparency, and establishing consequences for misuse.
2. When explaining the ethical considerations of quantum computing to students, I would emphasize the importance of responsible research and development practices. This includes conducting ethical research, considering potential societal impacts, and prioritizing the equitable distribution of benefits. Encouraging ethical decision-making and transparency can contribute to the responsible advancement of quantum technology.
3. Quantum computing's energy efficiency can contribute to a more sustainable future by reducing the energy consumption associated with large-scale computations. This can help address environmental challenges by minimizing the carbon footprint of data centers and supercomputers.
4. Quantum computing has the potential to transform industries like healthcare by accelerating drug discovery and improving disease modeling. In AI, it can enhance machine learning algorithms. Societal changes may include improved healthcare outcomes and personalized treatments. Managing these transformations responsibly involves addressing issues of data privacy, ethics in AI, and ensuring equitable access to healthcare advancements.

