Homework Quiz - Week 8 Results for Murshed SK

Correct answers are hidden.

Score for this attempt: 10 out of 10
Submitted Nov 26, 2023 at 5:27pm
This attempt took 593 minutes.

Question 1
1 / 1 pts

Which of the following statements best describes the relationship between two entangled qubits?

- The two qubits magnetically repel one another.
- The two qubits are always physically close to one another.
- The two qubits are independent of one another.
- If you measure one qubit's state, you learn about the other qubit's state.
- The two qubits are in a superposition.

Question 2
1 / 1 pts

When a qubit is in a superposition in the z-basis, what state is it in?

- A combination of 0 and 1
- 0
- 0.5
- 1
- -1

Question 3
1 / 1 pts

Quantum mechanics is said to be "probabilistic", which of the following best describes this?

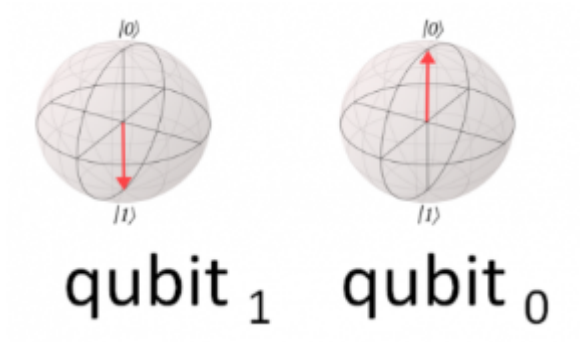
- Quantum hardware is not advanced enough to produce deterministic, reliable results.
- The most we can do to predict outcomes of quantum measurements is determine the probabilities of getting each possible result.
- Quantum mechanics is, at its core, completely random.

We do not have sufficient evidence to prove quantum mechanics is true, so we say it is probably true or “probabilistic”.

We can predict the most probable outcome of quantum measurement, but no others.

Question 4
1 / 1 pts

Which of the following is the correct ket for the 2 qubit state represented by the following Bloch spheres in right-indexed notation (meaning the order the qubits are shown below)?



01

00

11

10

00 + 11

Question 5
1 / 1 pts

Which of the following best describes the role of phase and amplitude in quantum computing?

We can increase the amplitude of correct solutions by interfering states with phase differences.

We can increase the phase of correct solutions by interfering with amplitude differences.

Amplitudes are useful in quantum computing because by increasing the amplitude of the correct solution, we are more likely to measure the correct solution. Phase has no role in quantum computing.

Phase is useful in quantum computing because though phase differences, we decrease the likelihood of measuring the incorrect answer. Amplitude has no role in quantum computing.

Neither phase nor amplitude play a role in quantum computing and are only useful in theoretical applications of quantum mechanics.

Question 6
1 / 1 pts

In Problem #1.1, what state is the qubit in at the end of the circuit?

- 0
- 1
- -
- +

Question 7
1 / 1 pts

In Problem #2.2, what is the coefficient (the number) in front of the kets of the final state?

- 1
- 0.71
- 0.5
- 0.35
- 0.125

Question 8
1 / 1 pts

According to the histogram in Problem #2.5, which of the following states are not possible to measure in this circuit?

- 000 and 111
- 001 and 110
- 010 and 101
- 100 and 011
- None of the above

Question 9
1 / 1 pts

In Problem #2.6, does the circuit create an entangled state?

- Yes
- No

- Impossible to tell
- Impossible with only two qubits
- None of the above

Question 10
1 / 1 pts

Based on the measurement results in Problem #2.7, which of the following can we conclude about the state of the qubits? The qubits are…

- (selected) Entangled to always be in opposite states
- In an equal superposition of all possible 2 qubit states
- In an unequal superposition of all possible 2 qubit states
- Neither entangled nor in a superposition

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