Homework Quiz - Week 19 Results for Murshed SK

Correct answers are hidden.

Score for this attempt: 10 out of 10
Submitted Mar 11 at 4:24am
This attempt took 4 minutes.

Question 1
1 / 1 pts

What is a key characteristic of near-term quantum algorithms?

- They can solve large-scale problems efficiently.
- They rely on fault-tolerant quantum hardware.
- They are suitable for current, noisy quantum devices.
- They require minimal classical computation.
- They outperform classical algorithms on all tasks.

Question 2
1 / 1 pts

What does NISQ stand for?

- Non-Interfering Sequential Quantum
- Newly Introduced Superconducting Quantum
- Noisy Intermediate-Scale Quantum
- Narrow Integration of Superconducting Qubits
- Non-Isolated Sequential Quantum

Question 3
1 / 1 pts

Which algorithmic approach aims to combine classical and quantum computing to solve complex problems effectively?

- Hybrid
- Long-term
- Quantum annealing
- Grover's
- Classical optimization

Question 4

1 / 1 pts

Which of the following best describes the relationship between the terms “near term”, “hybrid”, and “variational” quantum algorithms?

- They are all synonyms of each other.
- Near term is a general category consisting of two different branches: hybrid and variational.
- Variational algorithms are a type of hybrid algorithms, which in turn are a type of near term algorithm.
- Variational algorithms are a type of hybrid algorithms, which are commonly used as near term algorithms.
- Variational algorithms are a type of near term algorithms, which in turn are a type of hybrid algorithm.

Question 5

1 / 1 pts

What makes variational quantum algorithms "variational"?

- They vary the number of qubits used in each run of the algorithm.
- The term "variational" refers to the algorithms' ability to operate at varying temperatures.
- Variational quantum algorithms are named for the adjustable parameters in their quantum circuits, which are optimized to achieve the best result.
- They are called "variational" because they can be used in a variety of quantum computers, irrespective of the underlying technology.
- The term comes from the algorithms' ability to vary their output based on quantum interference.

Question 6

1 / 1 pts

In a variational quantum algorithm, what is the primary goal of the classical optimization process? To:

- Help quantum computers combat noise
- Measure quantum states
- Maximize quantum entanglement
- Minimize the cost function
- Create quantum states from classical data

Question 7

1 / 1 pts

Which state is produced in Problem #1.3?

a. $|0\rangle$
b. $|1\rangle$
c. $|+\rangle$
d. $|-\rangle$
e. None of the above

- a.
- b.
- c.
- d.
- e. none of the above

Question 8

1 / 1 pts

If you apply an X rotation of 90 degrees, a Z rotation of 90 degrees, and a Y rotation of 270 degrees, what is the final state? **NOTE**: We encourage you to work this out on paper or with Cirq code.

a. $|0\rangle$
b. $|1\rangle$
c. $|+\rangle$
d. $|-\rangle$
e. None of the above

- a.
- b.
- c.
- d.
- e. none of the above

Question 9

1 / 1 pts

In Problem #1.5, you start the circuit by performing a 45 degree rotation around the Y axis and then produce an entangled state. What angle (in degrees) would be needed to produce a *maximally entangled* state?

- 0
- 45

- 90
- 180
- 360

Question 10

1 / 1 pts

In Problem #2.1, which of the following gates *would not* work for our circuit ansatz?

- Rotational X
- Rotational Y (we are given this ansatz to show that it is not effective)
- Rotational Z
- Rotational H
- All gates would work so long as they're tunable

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