

Cumulative Quiz

Due Jul 1 at 2:59am **Points 50** **Questions 26**

Available Jun 28 at 12am - Jul 1 at 2:59am 3 days **Time Limit None**

Allowed Attempts Unlimited

Instructions

This quiz is constructed from the questions the workshop participants (i.e. you guys) have submitted. There are 5 randomly chosen questions from each day.

We have not checked for the correctness or formatting of these questions (there are 100s of them). So there are two additional options in each question for you to indicate if the question has problem.

- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

We will manually go over these questions after you submit and give you credit if it is due.

Good luck

[Take the Quiz Again](#)

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	63 minutes	26 out of 50 *

* Some questions not yet graded

! Correct answers are hidden.

Score for this attempt: **26** out of 50 *

Submitted Jun 29 at 11:24pm

This attempt took 63 minutes.

Incorrect	Question 1	0 / 2 pts
What will be probabilities of measuring qubit in state zero and one when qubit is in state		

$$\cos \frac{\pi}{2} |0\rangle + i \sin \frac{\pi}{2} |1\rangle$$

$p(|0\rangle) = 1, p(|0\rangle) = 0$

$p(|0\rangle) = \frac{\pi}{2}, p(|0\rangle) = 1 - \frac{\pi}{2}$

$p(|0\rangle) = 0.5, p(|0\rangle) = 0.5$

$p(|0\rangle) = 0, p(|0\rangle) = 1$

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Question 2

2 / 2 pts

How many quantum states can you represent using 4 qubits?

16

8

2

4

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Question 3

2 / 2 pts

What's the probability of measuring state

$|0\rangle$

in state vector

$$3i/\sqrt{18}|0\rangle + 1/\sqrt{2}|1\rangle$$

?:

 1/2 $(3/\sqrt{18})^2i$ $3i/\sqrt{18}$ $1/\sqrt{2}$ There is no correct answer. Text formatting is so bad I cannot understand the question or answers.**Question 4****2 / 2 pts**

Are complex numbers necessary and sufficient for quantum computing?

 No, probabilistic reals (fuzzy logic) is sufficient. No, in QGold you will learn how quaternions are the actual model.

As per our current understanding of physics is. The Hilbert space formalism can describe all experimental phenomena.

Complex numbers work because both imaginary numbers and quantum mechanical principles are both counterintuitive.

 There is no correct answer. Text formatting is so bad I cannot understand the question or answers.

Question 5**2 / 2 pts**

Which one of the following is the wrong initialization of complex numbers in Python?

- 3+4i
- 3+4J
- 3+4j
- complex(3,4)
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Incorrect**Question 6****0 / 2 pts**

What is the significance of the local phase in a quantum state?

- It does not have any significance.
- It affects the measurement results of 0 and 1.
- It affects the results of measurements that are carried out in bases other than the

$\{|0\rangle, |1\rangle\}$
basis.

- It is only important in mathematical calculations.
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 7

0 / 2 pts

Which of the following affects the probability of a quantum state?

- None of them
- Global phase
- Local phase
- Both of them
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 8

0 / 2 pts

The phase, be it global or local, does not affect the probabilities to observe a quantum system in state

 $|0\rangle$

or

 $|1\rangle$

after the measurement.

- True
- False
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Question 9**2 / 2 pts**

On a Bloch sphere, on the poles of the z-axis, there are:

- states $|+\rangle$ and $|-\rangle$
- states $|0\rangle$ and $-|0\rangle$
- states $|0\rangle$ and $|1\rangle$
- states $|1\rangle$ and $-|1\rangle$
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Question 10**2 / 2 pts**

Choose the correct answer:

- Each point in the Bloch sphere represents a 2-qubit quantum state.
- The radius of the Bloch sphere depends on the state.
- The Bloch sphere makes uses of two angles between 0 and 2π .
- Each point in the Bloch sphere represents a 1-qubit quantum state.
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Incorrect**Question 11****0 / 2 pts**

What are the eigenvalues of X-operator?

1,1 1,0 1/2,-1/2 1,-1 There is no correct answer. Text formatting is so bad I cannot understand the question or answers.**Question 12**

2 / 2 pts

`circuit.append(X(qlist[2]))` will apply NOT gate on qubit number:

 None of them Third Both of them Second There is no correct answer. Text formatting is so bad I cannot understand the question or answers.**Question 13**

2 / 2 pts

Please indicate wrong sentence:

 $QFT \cdot QFT^\dagger = I$ A QFT is a unitary operator



Hadamard gate performs the discrete Fourier transform for $N = 2$ on the amplitudes of the state

$QFT = QFT^\dagger$

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 14

0 / 2 pts

$x=[1 \ -1]'$, which of the following is the right result if we apply the DFT gate at the vector x ?

$y=[0 \ \sqrt{2}]'$

$y=[0 \ 1/\sqrt{2}]'$

$y=[1 \ \sqrt{2}]'$

$y=[0 \ \sqrt{2}/2]'$

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 15

0 / 2 pts

Can I see the same

ω

solutions in totally different parts of QFT not by accident?

It would a pure accident.



Yes, it is because QFT is a quantum gate, so we should see some patterns.



Yes, since

ω

solutions are on the complex unit circle, they will make a full rotation after on it after some time, so its solutions will repeat.

It is impossible to see same solutions for

ω

- raised to different powers.
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Question 16

2 / 2 pts

In QFT first we put the qubits in superposition, then apply controlled unitary operation on target qubits. What is the next step in process?

-
- apply inverse Fourier transform
 - apply multi qubit gates
 - apply classical algorithm.
 - measure the qubits
 - There is no correct answer.
 - Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 17

0 / 2 pts

It's possible to encode global phase as local phase.

-
- False
-
- True
-
- There is no correct answer.
-
- Text formatting is so bad I cannot understand the question or answers.

Question 18**2 / 2 pts**

What number has the continued fraction representations [2, 1, 4, 2]

$\frac{25}{11}$

$\frac{26}{5}$

$\frac{31}{11}$

$\frac{105}{31}$

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 19**0 / 2 pts**

What is the QFT?

The QFT (Quantum Finite Transform) is a mathematical method to calculate the patterns in amplitudes of the wave function. psi.

The QFT (Quantum Finite Transform) is a method implemented with Hadamard gates to calculate the patterns in amplitudes of the wave function. psi.

The QFT (Quick Finite Transform) is a method implemented with Hadamard gates to calculate the quickest finite transform of the wave function. psi.

The QFT or quantum Fourier Transform implements the discrete Fourier transform on a quantum computer. It works on the amplitudes of the psi wave function.

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 20

0 / 2 pts

What does

$$\phi = 0.\phi_1\phi_2\dots\phi_t$$

represent in the notebook titled "Phase Estimation"

$$\phi$$

written in the form of a decimal fraction.

$$\phi$$

written in the form of a binary fraction.

This is a typo in the notebook.

ϕ

is the product of

$$\phi_0, \phi_1, \dots \phi_t$$

, and the value

$$\phi_0 = 0$$

- has been substituted into the formula.
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Question 21

2 / 2 pts

Which among the following statements about Shor's algorithm is false?

- Shor's algorithm provides quadratic speedup compared to the best known classical algorithm.
- If r is not even, then one should pick a new x and repeat the algorithm.
- When s and r are not relatively prime, the algorithm needs to be repeated.
-
- The main advantage of Shor's algorithm is the ability to compute r efficiently.
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Question 22

2 / 2 pts

Which of the following classical encryption algorithms can be broken by Shor's algorithm?

- SHA-256
- RSA.
- Blowfish.
- AES-256.
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 23

0 / 2 pts

What are the co-primes of 10 between 1 and 9? (two numbers are coprime if they don't have any common divisors)

- 3,7,9
- 2,5
- 6,7,8
- 2,5,8
- There is no correct answer.
- Text formatting is so bad I cannot understand the question or answers.

Incorrect

Question 24

0 / 2 pts

We factorize 99 by using Shor's algorithm We feed

$$U_8$$

to the phase estimation procedure such that

$$U_8|x\rangle = |8x \mod 99\rangle$$

. Suppose that after the continued fraction algorithm we obtain

$$\frac{k}{r}$$

in the lowest term correctly. Which one of the followings cannot be such

$$\frac{k}{r}$$

?

$\frac{7}{5}$

$\frac{9}{2}$

2

$\frac{4}{3}$

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Question 25

2 / 2 pts

With what probability are the states that are integer multiples of $2^t / r$, sampled?

approximated $1/N$

approximated $1/r$

approximated $1/t$

approximated $1/(2^t)$

There is no correct answer.

Text formatting is so bad I cannot understand the question or answers.

Unanswered

Question 26**Not yet graded / 0 pts**

If you marked one or more questions as having no correct answer or being badly formatted, please write down their question numbers in the text box below. For any questions which you think have no correct answer, please indicate, if possible, what the current answer should be.

We will manually check these questions and give you credit if it is due.

If you didn't have any such issues, you can leave this question blank.

Your Answer:

Quiz Score: **26** out of 50