Quiz- QPE, Order finding, Shor Results for SevdanurGenc

(!) Correct answers are hidden.

Score for this attempt: 10.67 out of 20

Submitted Jun 13 at 12:43am This attempt took 16 minutes.

Partial

Question 1	0.67 / 2 pts
[D03-03] Select the steps of the QPE algorithm.	
Initialize first register as the eigenvector of the operator U.	
Apply CU^k operator where the target is the second register.	
Apply X gates to the all qubits in the first register.	
Apply Hadamard gate to the first register.	
Apply inverse QFT to the first register.	

Question 2	2 / 2 pts
[D03-08] How do you initialize the second register in QPE?	
It is initialized as the eigenvector of the operator U.	
 We leave qubits in the second register in 0 state. 	
 We apply H to each qubit in the second register. 	
 We apply X and H to each qubit in the second register. 	

Question 3

2 / 2 pts

[D03-01] Select the eigenvectors and the corresponding eigenvalues of the Z operator.

| O | O | with eigenvalue 1 |
|-> with eigenvalue 1 |
|-> with eigenvalue -1 |
|--> with eigen

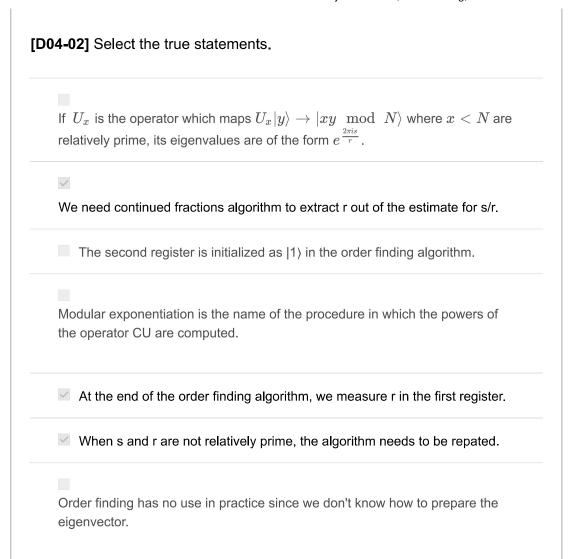
Question 5

[D04-01] Let x=4 and N=81. What is r ? (You can compute in Python)

Incorrect

Question 6

0 / 2 pts



Question 7 [D04-03] Given the continued fraction expression [1,4,2,1] write one of the convergents. (Do not leave any space e.g. write 3/2 instead of 3 / 2)

Question 8

2 / 2 pts

[D05-01] Select the true statements.

It is proven that no classical algorithm solves the factoriazation problem in polynomial time.

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The main advantage of Shor's algorithm is the ability to compute r efficiently.

- If r is not even, then one should pick a new x and repeat the algorithm.
- Shor's algorithm provides quadratic speedup compared to the best known classical algorithm.

Incorrect

Question 9

0 / 2 pts

[D05-02] If the quantum state before applying the inverse QFT is the the following state,

$$rac{1}{\sqrt{2^9}}ig(|0
angle|1
angle+|1
angle|3
angle+|2
angle|9
angle+|3
angle|7
angle+|4
angle|1
angle+|5
angle|3
angle+|6
angle|9
angle+\ldots+|2
angle$$

what is r?



>

8

Jnanswered

Question 10

0 / 2 pts

[D06-01] If at the end of the Shor's algorithm, the probability of observing state $|k\rangle$ is given by $\left|\frac{1}{\sqrt{85\cdot512}}\sum_{x=0}^{84}e^{-\frac{2\pi i(6x+2)k}{512}}\right|^2$, write down a state (except 0 and 256) which is likely to be observed with high probability. (Write it as a decimal number, e.g. 34)



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