

Homework Quiz - Week 9 Results for Murshed SK

! Correct answers are hidden.

Score for this attempt: 10 out of 10

Submitted Dec 4, 2023 at 1:15pm

This attempt took 8 minutes.



Question 1

2 / 2 pts

In Problem #2.1, what is the *smallest* possible key this code can produce after performing all 9 steps?

- ☒ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5



Question 2

2 / 2 pts

In Problem #2.1, what is the largest possible key this code can produce after performing all 9 steps?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☒ 4
- ☐ 5



Question 3

2 / 2 pts

In Problem #2.3, which of the following situations might result in a problem for Alice and Bob? Alice encoding a:

- ☐ 0 in the Z basis.
- ☐ 1 in the Z basis.
- ☐ 0 in the X basis.

- ☒ 1 in the X basis.
- ☐ All of the above.
- ☐ None, switching these steps still allows Alice and Bob to perform the protocol correctly.



Question 4

2 / 2 pts

Based on Problem #2.4, why would we want to keep Alice's and Bob's circuits separate? So that:

- ☐ We can rerun just Phase #2 without having to rerun Phase #1 first.
- ☐ Alice's and Bob's roles are clearer for anyone reading the code.
- ☒ Both of these reasons.
- ☐ No reason, these are identical approaches.



Question 5

2 / 2 pts

Generalizing from Problem #2.5, if Alice sends n qubits in Phase #1 and Alice and Bob agree to compare k bits in Phase #3, what is the largest possible key they can end up with at the end of the protocol?

- ☒ $n - k$
- ☐ $k - n$
- ☐ $n - k - 1$
- ☐ $n - k + 1$
- ☐ $n + k$
- ☐ $n - 1$

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