Name of the candidate: _____

(1.2 points) **Question 1**
What is the purpose of a constructor in C++? Write a class `Person` with a constructor that takes a name and an age.

Answer

(1.2 points) **Question 2**
Explain the role of smart pointers in C++. Compare `std::unique_ptr` and `std::shared_ptr`, and illustrate their usage.

Answer

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(1.2 points) **Question 3**

What is the role of `const` in a C++ function parameter or return type? Write a function that takes a `const std::string&` and returns its size.

Answer

(1.2 points) **Question 4**

Explain what a header file is in C++ and how it is used. Give a basic example with one header and one source file.

Answer

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(1.2 points) **Question 5**

What is the meaning of the `override` specifier in C++? Provide an example that shows how it is used in class hierarchies.

Answer

(1.2 points) **Question 6**

In Python, what is the difference between a list and a tuple? Provide one example of each.

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(1.2 points) **Question 7**

What is a lambda function in Python? Write a lambda that returns the square of a number.

Answer

(1.2 points) **Question 8**

What is exception handling in Python? Write a try-except block that catches a
`ZeroDivisionError`.

Answer

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(1.2 points) **Question 9**

What is the difference between `import`, `from ... import`, and `import ... as` in Python? Provide examples that highlight when each form is appropriate.

Answer

(1.2 points) **Question 10**

In pybind11, how do you expose a simple C++ function to Python? Write a minimal example.

Answer