Name of the candidate: _____

(1.2 points) **Question 1**
Explain the concept of polymorphism in C++ and its role in object-oriented programming. Provide a C++ example demonstrating runtime polymorphism.

Answer

(1.2 points) **Question 2**
Discuss the difference between deep copy and shallow copy in C++. How does the Rule of Three help manage resource ownership correctly?

Answer

Name of the candidate: _____

(1.2 points) **Question 3**
Describe the differences between stack and heap memory allocation in C++. When should you use each, and how can improper usage lead to memory issues?

Answer

(1.2 points) **Question 4**
Explain the concept of template metaprogramming in C++. Provide an example where template specialization is useful.

Answer

Name of the candidate: _____

(1.2 points) **Question 5**
Explain the role of the `std::move` function in C++. Provide an example illustrating how move semantics can improve performance.

Answer

(1.2 points) **Question 6**
Convert the following `for` loop into a list comprehension:

```
result = []
for i in range(10):
      if i % 2 == 0:
            result.append(i * i)
```

Answer

Name of the candidate: _____

(1.2 points) **Question 7**
Describe the usage and the scope of the `@staticmethod` decorator in Python.
Provide an example where this feature is useful.

Answer

(1.2 points) **Question 8**
In Python, explain what *magic methods* are. Provide examples of use.

Answer

Name of the candidate: _____

(1.2 points) **Question 9**
What is a Python module and what are possible use cases for having a `__init__.py` file?

Answer

(1.2 points) **Question 10**
In pybind11, what is the syntax for binding a parametrized constructor of a class?

Answer