Started on	Wednesday, 19 November 2025, 12:57 PM
State	Finished
Completed on	Wednesday, 19 November 2025, 1:17 PM
Time taken	19 mins 26 secs
Marks	10.00/20.00
Grade	**50.00** out of 100.00

Question 1

Complete

Mark 0.00 out of 1.00

What is the output of the following C++ code?

```
int x = 10;
auto lambda = [=]() mutable { x += 5; return x; };
lambda();
cout << x;
```

- a. 10
- b. Compile error
- c. 15
- d. Undefined behavior

Question 2

Complete

Mark 0.00 out of 1.00

What does the following code print?

```
struct Base { virtual void f() { cout << "B"; } };
struct Derived : Base { void f() override { cout << "D"; } };
Base b = Derived();
Base b = Derived();
b.f();
```

- a. D
- b. Compilation error
- c. B
- d. Undefined behavior

Question 3

Complete

Mark 1.00 out of 1.00

Which of the following best describes the Rule of Five?

- a. Always use smart pointers for dynamic memory
- b. If you define one of: destructor, copy constructor, copy assignment, move constructor, move assignment — you should define all
- c. Defines how many parameters a template can take
- d. To avoid using raw pointers in modern C++

Question 4

Complete

Mark 0.00 out of 1.00

Which of the following leads to a data race?

- a. Threads using mutex-protected code
- b. Two threads reading the same variable
- c. One thread writing while another thread reads a non-atomic variable
- d. Two threads writing to atomic variables

Question 5

Complete

Mark 1.00 out of 1.00

What happens when two threads call wait() on the same object?

- a. Both threads go to WAITING state until notified
- b. JVM chooses one at random
- c. Both threads wake up immediately
- d. Only one thread becomes BLOCKED

Question 6

Complete

Mark 0.00 out of 1.00

In C++, which operation is guaranteed not to throw an exception?

- a. Copy construction of a class containing std::string
- b. std::move() of a vector
- c. std::swap() of a vector
- d. noexcept move constructor

Question 7

Complete

Mark 0.00 out of 1.00

What happens if a std::vector grows beyond its current capacity?

a. It blocks until another vector releases memory
b. It grows in-place without relocation
c. It throws an exception
d. It reallocates memory and invalidates all pointers/references

Question 8

Complete

Mark 0.00 out of 1.00

What is the output?

```
String s1 = new String("abc");
String s2 = "abc";
System.out.println(s1 == s2);
```

a. false
b. Compile error
c. true
d. Depends on JVM

Question 9

Complete

Mark 0.00 out of 1.00

What will happen in this multithreaded code?

```
synchronized void add() {
   add();
}
```

a. StackOverflowError
b. Compilation error
c. ReentrantLock will solve it automatically
d. Deadlock

Question 10

Complete

Mark 1.00 out of 1.00

5.What will the following code print?

- a. Throws NullPointerException
- b. 1
- c. 2
- d. 0

Question 11

Complete

Mark 0.00 out of 1.00

6. What is the output?

- a. true only for values < -128
- b. false
- c. false only for values > 127
- d. true

Question 12

Complete

Mark 1.00 out of 1.00

What happens if an exception is thrown during stack unwinding and not handled?

- a. All stack variables stay intact
- b. Causes undefined behavior only in debug mode
- c. Program continues after catch block
- d. Program terminates by calling std::terminate()

Question 13

Complete

Mark 0.00 out of 1.00

What happens when a subclass defines a method with the same signature as a final method in the parent class?

- a. Runtime exception
- b. Compilation error
- c. It hides it
- d. It overrides it

Question 14

Complete

Mark 1.00 out of 1.00

What is guaranteed about a class with a virtual destructor?

- a. Deleting through a base pointer calls the derived destructor
- b. It must implement all pure virtual methods
- c. It cannot be inherited
- d. It prevents object slicing

Question 15

Complete

Mark 1.00 out of 1.00

What is guaranteed by the Java Memory Model for a volatile variable?

- a. It prevents thread starvation
- b. It prevents all race conditions
- c. Visibility across threads
- d. Atomicity for i++ operations

Question 16

Complete

Mark 1.00 out of 1.00

What is the biggest difference between unique_ptr and shared_ptr?

- a. unique_ptr supports custom deleters, shared_ptr does not
- b. Both have the same ownership semantics
- c. shared_ptr manages ownership through reference counting
- d. shared_ptr is faster than unique_ptr

Question 17

Complete

Mark 0.00 out of 1.00

Which C++ feature allows compile-time computation?

- a. lambda functions
- b. inline
- c. RTTI
- d. constexpr

Question 18

Complete

Mark 1.00 out of 1.00

Which class is NOT thread-safe?

- a. ConcurrentHashMap
- b. StringBuilder
- c. CopyOnWriteArrayList
- d. StringBuffer

Question 19

Complete

Mark 1.00 out of 1.00

Which Java collection guarantees traversal in insertion order?

- a. TreeSet
- b. LinkedHashSet
- c. ConcurrentSkipListSet
- d. HashSet

Question 20

Complete

Mark 1.00 out of 1.00

Which statement is TRUE about Java streams?

- a. Stream operations always run sequentially
- b. Intermediate operations are lazy
- c. Streams can be reused
- d. Terminal operations produce another stream