1. Which of the following statements about encapsulation is true?

- A) It hides data within a single class.

- B) It exposes the internal implementation of a class.

- C) It focuses only on reusability of code.

- D) It makes all attributes of a class public.

2. What will the following code output?

class Example {

String message = "OOP Concepts";

void displayMessage() {

System.out.println(message);

}

}

public class Test {

public static void main(String[] args) {

Example e = new Example();

e.message = "Encapsulation";

e.displayMessage();

}

}

- A) OOP Concepts

- B) Encapsulation

- C) Compilation Error

- D) Runtime Exception

3. Which of the following best describes abstraction?

- A) Hiding implementation details and exposing only functionality.

- B) Making all methods private.

- C) Encapsulating data into a single class.

- D) Exposing internal logic for debugging.

4. What is the output of the following code?

abstract class Animal {

abstract void sound();

}

class Dog extends Animal {

void sound() {

System.out.println("Woof");

}

}

public class Main {

public static void main(String[] args) {

Animal a = new Dog();

a.sound();

}

}

- A) Compilation error

- B) Woof

- C) Runtime exception

- D) Abstract method cannot be instantiated

5. Consider the following code. What will it output?

class Parent {

void display() {

System.out.println("Parent");

}

}

class Child extends Parent {

void display() {

System.out.println("Child");

}

}

public class Main {

public static void main(String[] args) {

Parent p = new Child();

p.display();

}

}

- A) Parent

- B) Child

- C) Compilation Error

- D) Runtime Exception

6. Which of the following is not true about method overloading?

- A) It is a compile-time polymorphism.

- B) It allows methods with the same name but different parameters.

- C) It supports inheritance.

- D) It cannot change the return type.

7. What will happen if an interface method is declared as `private` in Java?

- A) It will work as expected.

- B) Compilation error.

- C) The method will not be accessible to implementing classes.

- D) The method will be treated as default.

8. What does the following code print?

interface A {

default void show() {

System.out.println("Interface A");

}

}

class B implements A {

public void show() {

System.out.println("Class B");

}

}

public class Main {

public static void main(String[] args) {

A obj = new B();

obj.show();

}

}

- A) Interface A

- B) Class B

- C) Compilation error

- D) Runtime exception

9. Which keyword is used to rethrow an exception in Java?

- A) throw

- B) throws

- C) catch

- D) finally

10. What does the following code output?

public class Test {

public static void main(String[] args) {

try {

int data = 10 / 0;

} catch (ArithmeticException e) {

System.out.println("Exception caught");

} finally {

System.out.println("Finally block executed");

}

}

}

- A) Exception caught

- B) Finally block executed

- C) Exception caught Finally block executed

- D) Runtime exception

11. What is the correct way to write data to a file in Java?

- A) Using Scanner class

- B) Using FileOutputStream

- C) Using Thread class

- D) Using Console class

12. What does the following code snippet achieve?

BufferedReader br = new BufferedReader(new FileReader("input.txt"));

String line;

while ((line = br.readLine()) != null) {

System.out.println(line);

}

br.close();

- A) Writes data to the file

- B) Appends data to the file

- C) Reads data from the file and prints it

- D) Deletes the file

13. Which of the following operations is not supported by the String class in Java?

- A) substring()

- B) reverse()

- C) toUpperCase()

- D) concat()

14. What will be the output of the following code?

String s1 = "Java";

String s2 = new String("Java");

System.out.println(s1 == s2);

- A) true

- B) false

- C) Compilation error

- D) Runtime exception

15. Which collection should you use if you need a sorted set of unique elements?

- A) ArrayList

- B) HashSet

- C) TreeSet

- D) HashMap

16. What is the output of the following code?

List<Integer> list = new ArrayList<>();

list.add(1);

list.add(2);

list.add(3);

list.remove(1);

System.out.println(list);

- A) [1, 2, 3]

- B) [1, 3]

- C) [2, 3]

- D) [1, 2]

17. Which is not a valid state in the thread lifecycle?

- A) New

- B) Blocked

- C) Waiting

- D) Terminating

18. What is the purpose of the `join()` method in Java?

- A) To merge threads

- B) To terminate a thread

- C) To wait for a thread to finish execution

- D) To start a thread

19. Which SOLID principle emphasizes a class should have only one reason to change?

- A) Single Responsibility Principle

- B) Open-Closed Principle

- C) Interface Segregation Principle

- D) Dependency Inversion Principle

20. What does the following code output?

class Singleton {

private static Singleton instance;

private Singleton() {}

public static Singleton getInstance() {

if (instance == null) {

instance = new Singleton();

}

return instance;

}

}

public class Main {

public static void main(String[] args) {

Singleton s1 = Singleton.getInstance();

Singleton s2 = Singleton.getInstance();

System.out.println(s1 == s2);

}

}

- A) true

- B) false

- C) Compilation error

- D) Runtime exception