

CSC 1103 - Midterm Exam 2

Version B

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Student Information

Name: _____

ID Num-
ber: _____

Instructions:

- Answer all questions in the space provided.
- Total points: 100.
- Topics: Loops, Strings, Math Methods, Static/Recursive Methods.
- **This exam contains 8 pages.**

Part I: Multiple Choice Questions (60 Points)

Instructions: Circle the letter of the single best answer. (3 Points Each)

1. Which keyword immediately stops the execution of a loop?
 - (A) `continue`
 - (B) `return`
 - (C) `break`
 - (D) `exit`
2. Which of the following is true regarding **method overloading**?
 - (A) Methods must share the same name but different parameters
 - (B) Methods must have distinct names
 - (C) Methods must be in separate classes
 - (D) Methods must have the exact same signature
3. What is the output of: `System.out.println(4 + 5 + " Rules");`?
 - (A) 9 Rules
 - (B) 45 Rules
 - (C) Error
 - (D) 9Rules
4. What is the result of `"Student".charAt(0)`?
 - (A) 't'
 - (B) 'S'
 - (C) 'u'
 - (D) 'd'
5. Which is a valid static method header?
 - (A) `void static name()`
 - (B) `static void name()`
 - (C) `public name static()`
 - (D) `name void static()`

6. What is the output of `Math.min(20, Math.max(5, 10))`?

- (A) 5
- (B) 10
- (C) 20
- (D) 15

7. Which `Scanner` method reads a full line of text?

- (A) `next()`
- (B) `read()`
- (C) `nextLine()`
- (D) `getString()`

8. Attempting to access a negative index in a `String` results in:

- (A) Returns first char
- (B) Returns last char
- (C) `StringIndexOutOfBoundsException`
- (D) Returns `null`

9. Which method converts a `String` to an `int`?

- (A) `Integer.parseInt()`
- (B) `String.toInt()`
- (C) `Math.toInt()`
- (D) `Integer.valueOf()`

10. What is the output of the following recursive method if called as `rec(3)`?

```
public static void rec(int n) {  
    if (n > 0) {  
        rec(n - 1);  
        System.out.print(n + " ");  
    }  
}
```

- (A) 3 2 1
- (B) 1 2 3
- (C) 3 2 1 0
- (D) 0 1 2 3

11. What is the output of `Math.sqrt(25)`?

- (A) 5.0
- (B) 2.5
- (C) 12.5
- (D) 625.0

12. In `for(init; cond; update)`, which part executes first?

- (A) cond
- (B) update
- (C) init
- (D) body

13. Ambiguous invocation of a method results in a:

- (A) Runtime Error
- (B) Compile Error
- (C) Logical Error
- (D) Warning

14. What is the index of the first character in a `String`?

- (A) 1
- (B) 0
- (C) -1
- (D) size

15. A recursive method without a base case typically causes:

- (A) Compiler Error
- (B) StackOverflowError
- (C) Infinite Loop (runtime)
- (D) NullPointerException

16. Which method converts a string to all lowercase letters?

- (A) `toLowerCase()`
- (B) `toLower()`
- (C) `lowerCase()`
- (D) `changeCase(false)`

17. What does `Math.ceil(2.1)` return?

- (A) 2.0
- (B) 3.0
- (C) 2.1
- (D) 2

18. Which loop might NOT execute its body at all?

- (A) `do-while`
- (B) `while`
- (C) Both A and B
- (D) None

19. What is the value of `"Java".length()`?

- (A) 3
- (B) 4
- (C) 5
- (D) 0

20. The method `indexOf('x')` returns ___ if 'x' is not found.

- (A) 0
- (B) 1
- (C) -1
- (D) Error

Part II: Short Answer Questions (40 Points)

1. **(Fill in Blank)** The _____ class is used for math operations like square roots and absolutes.
 2. **(Code)** Write a statement to cast `double d = 9.99` to an `int` variable `i`.
 3. **(Code)** Write a `for` loop printing: 10, 20, 30, 40.

4. (**Fill in Blank**) The `Math.random()` method returns a `double` value greater than or equal to 0.0 and less than _____.
5. (**Fill in Blank**) Recursion requires a _____ case to stop the process.
6. (**Code**) Write a static method `sum` that takes two integers (a, b) and returns their sum.

7. **(Code)** Write a loop printing numbers from **1 to 500** divisible by **both 2 and 5**.

8. **(Completion)** Fill in:

```
int k = 1;
while (_____) { // Run until 5
    System.out.println(k);
    _____;
}
```

9. **(Tracing)** What is the output of "Val: " + (4 + 5)?

10. **(Code)** Write a statement to parse "10.5" into a double.