CSC 1103 - Midterm Exam 2

Version C

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Student Information

Name: _____

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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. What is the output of `"A" + 1 + 2`?

   (A) `A3`
   (B) `A12`
   (C) `3A`
   (D) Error

2. Which loop is guaranteed to run at least one time?

   (A) `while`
   (B) `for`
   (C) `do-while`
   (D) `foreach`

3. What is the return type of `Math.pow(2, 3)`?

   (A) `int`
   (B) `double`
   (C) `float`
   (D) `long`

4. What is the last character of the string `"Exam"`?

   (A) `'m'`
   (B) `'a'`
   (C) `'x'`
   (D) `'E'`

5. Which is the correct syntax for a static method?

   (A) `public static void m()`
   (B) `void public static m()`
   (C) `static m() void`
   (D) `public void m() static`

6. In **method overloading**, methods must have:

   (A) The same name and different parameters

   (B) Different names

   (C) The same name and identical parameters

   (D) Different return types only

7. The `Scanner.next()` method reads until it finds:

   (A) End of line

   (B) Whitespace

   (C) End of file

   (D) First digit

8. String indices in Java start at:

   (A) `1`

   (B) `0`

   (C) `-1`

   (D) User defined

9. How do you convert `"99"` to an integer?

   (A) `Integer.parse("99")`

   (B) `Integer.parseInt("99")`

   (C) `String.toInt("99")`

   (D) `(int)"99"`

10. What is the output of the following recursive method if called as `fun(2)`?

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

   (A) `2 1`

   (B) `1 2`

   (C) `2 1 0`

   (D) `1`

11. Which method converts a `String` to upper case letters?

    (A) `toUpper()`

    (B) `toUpperCase()`

    (C) `upperCase()`

    (D) `makeUpper()`

12. In a `while` loop, the condition is checked:

    (A) Before body execution

    (B) After body execution

    (C) Never

    (D) Randomly

13. Which of the following describes **ambiguous invocation**?

    (A) Compiler cannot decide which method to match

    (B) Method calls itself too many times

    (C) Method variable is out of scope

    (D) Method is not static

14. Which loop runs exactly 5 times?

    (A) `for(int i=0; i<5; i++)`

    (B) `for(int i=1; i<5; i++)`

    (C) `for(int i=0; i<=5; i++)`

    (D) `for(int i=5; i>0; i++)`

15. To avoid infinite recursion, a recursive method must have a:

    (A) Loop

    (B) Base case

    (C) `static` keyword

    (D) Return value

16. What is the output of the following code?
```
String s = "Hot"; s = s.concat("Dog"); System.out.println(s);
```

    (A) `HotDog`

    (B) `Hot Dog`

    (C) `DogHot`

    (D) `Hot`

17. What is the result of `"JAVA".toLowerCase()`?

    (A) `"java"`

    (B) `"Java"`

    (C) `"jAVA"`

    (D) `"JAVA"`

18. Which keyword skips the remaining code in the loop body?

    (A) `break`

    (B) `continue`

    (C) `pass`

    (D) `next`

19. What is the length of an empty string `""`?

    (A) `0`

    (B) `1`

    (C) `null`

    (D) `-1`

20. What is the output of `"Java".indexOf('a')`?

    (A) `0`

    (B) `1`

    (C) `2`

    (D) `3`

Part II: Short Answer Questions (40 Points)

1. **(Fill in Blank)** To find the square root of a number, use the _____ method.

2. **(Code)** Write a statement to cast `float f = 5.5f` to an `int`.

3. **(Code)** Write a loop that prints: `5, 4, 3, 2, 1`.

4. **(Code)** Write a statement to generate a random `double` value between 0.0 (inclusive) and 1.0 (exclusive) using the `Math` class.

5. **(Fill in Blank)** Infinite recursion eventually leads to a _____ error.

6. **(Code)** Write a static method `sayHi()` that prints `"Hi"` to the console.

7. **(Code)** Write a loop printing numbers from **1 to 100** divisible by **4 and 10**.

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

```
int x = 0;
while (__________) { // Run while x less than 5
    System.out.println(x);
    __________;
}
```

9. **(Tracing)** What is the output of `1 + 2 + " Go"`?

10. **(Code)** Write a statement to parse `"500"` into a `double`.