



**UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA**  
**SECOND SEMESTER EXAMINATIONS, MAY 2018**

**COURSE NO: CE 274**

**COURSE NAME: PROGRAMMING WITH JAVA – PART II**

**CLASS: CE II**

**TIME: 2HRS**

Name: \_\_\_\_\_ Index Number: \_\_\_\_\_

***Attempt ALL Questions***

- 
1. Briefly explain how the compiler and the interpreter work. **2 marks**
  2. Briefly explain the differences between the following:
    - a. A single dimensional Array and an ArrayList **2 marks**
    - b. A HashSet and a HashMap **2 marks**
  3. State the differences between the PrintWriter class and the File class. **3 marks**
  4. State three advantages of object oriented programming. **1.5 marks**
  5. List two visibility modifiers for classes and explain how they affect methods and data fields in classes with the mentioned visibility modifiers. **2 marks**
  6. Given the following *if-else* statements: **5 marks**

```
int x; int y;
int z = (x + 2*y);

if (z == 4) {
    y += x ^ y;
} else if (z == 5) {
    y += x ^ y;
} else if (z == 6) {
    y += x + 3*y;
} else {
    y += x - y;
}
```

- a. Write down the value of y when x = -2 and y = 2.
- b. Write down the value of y when x = 3 and y = 2.
- c. Rewrite the above switch statement using *switch* statements.
7. Given the expression  $((x \leq 49) \wedge (x \geq 30)) \wedge (x < 99) \ \&\& \ ((x \geq 20) \vee (x = 45))$ , what is the value of the expression if: **2.5 marks**
- a. x = 50
- b. x = 48
- c. x = 20
- d. x = 31
- e. x = 100
8. Given the following sets: A = {-1, 1, 2, 3, 7, 9, 10}, B = {0, 1, 3, 4, 5, 6, 9, 12}, C = {0, 2, 4, 5, 7, 8}, and D = {-1, 3, 5, 7, 9, 10, 11}, write down the content of: **1.5 marks**
- a. Set A and B after the set operation: A.retainAll(B);
- b. Set B and C after the set operation: B.removeAll(C);
- c. Set C and D after the set operation: C.addAll(D);
9. Convert the following while-loop into a for-loop **3 marks**
- ```

int x = 0;
int sum = 0;
while (x <= 30) {
    if (x % 3 == 0) {
        sum = sum + x;
    }
    x++;
}

```
10. State two advantages and two disadvantages each of the Scanner and BufferedReader. **2 marks**
11. Define an exception, state the need for exception handling and list three instances when exception handling will be needed. **3.5 marks**
12. What do the **try**, **catch**, and **finally** blocks in exception handling do? **1.5 marks**

13. Given a two dimensional array of doubles, having two columns and an unknown size, write a for-loop to find the sum of the product of all entries for any set of entries in adjacent columns. **3 marks**
14. Write a loop that computes the sum of all numbers between 2 and 100 inclusive that are whole number multiples of 3 or 5. **2.5 marks**
15. Write a conditional statement with three branches that sets  $y$  to: 2 if  $x$  is positive, -3 if  $x$  is negative, and 0 if  $x$  is zero. **3 marks**