



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF COMPUTING AND INFORMATICS
DEPARTMENT OF SOFTWARE ENGINEERING**

QUALIFICATION: BACHELOR OF COMPUTER SCIENCE, BACHELOR OF COMPUTER SCIENCE IN CYBER SECURITY AND BACHELOR OF INFORMATICS	
QUALIFICATION CODE: 07BCMS, 07BCCY, 07BAIT	LEVEL: 5
COURSE: PROGRAMMING 1	COURSE CODE: PRG510S
DATE: DECEMBER 2025	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 75

SUPPLEMENTARY / SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
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INSTRUCTIONS TO STUDENTS
1. Answer ALL the questions. 2. Read all the questions carefully before answering. 3. Number the answers clearly.

THIS QUESTION PAPER CONSISTS OF 10 PAGES
(Including this front page)

SECTION A: Multiple choices and True and false Questions

[10 Marks]

The section consists of 10 questions. Answer ALL the questions.

1. Which keyword is used to define a method in Java? **[1 Mark]**

- A. define
- B. function
- C. method
- D. void

2. Which of the following is used to handle exceptions in Java? **[1 Mark]**

- A. try
- B. catch
- C. finally
- D. All of the above

3. Which method is the entry point for a Java program? **[1 Mark]**

- A. start()
- B. main()
- C. run()
- D. public()

4. What will be the output of the following code? **[1 Mark]**

```
int x = 10;  
if (x > 5) {  
    int y = x + 5;  
}  
System.out.println(y);
```

- A. 5
- B. 10
- C. 15
- D. Compilation Error

5. What will be the output of the following code? **[1 Mark]**

```
int i = 5;  
int j = i++;  
System.out.println(j);
```

- A. 0
- B. 5
- C. 6
- D. Compilation Error

6. Java uses curly braces { } to define blocks of code. **[1 Mark]**

- A. True
- B. False

7. Java is not a platform-independent programming language. **[1 Mark]**

- A. True
- B. False

8. The finally block always executes whether an exception is thrown or not. **[1 Mark]**

- A. True
- B. False

9. Java is a case-sensitive programming language. **[1 Mark]**

- A. True
- B. False

10. In Java, System.println() is used to display an output. **[1 Mark]**

- A. True
- B. False

*This section consists of 5 questions. Answer **ALL** the questions.*

When is answering the questions in this section, it is not necessary to include the class and main method.

Question One [2 Marks]

You are given the following variable declaration in Java,

```
int a = 5;
```

Use the **+=** operator to **add 3** to the variable **a**, and then print the result of the variable **a** to the console.

Question Two [2 Marks]

Declare a constant integer variable called **MAX SIZE** and assign it a value 100.

Question Three [2 Marks]

Declare a variable of data type float called **price** and assign it the value 15.95.

Question Four [2 Marks]

What is a stack overflow error in recursion? When does it occur?

Question Five [3 Marks]

What is the difference between checked and unchecked exceptions in Java? Give one example of each. Only write the lines of code that could lead to a checked or an unchecked exception. You do not need to write a complete Java program.

This section consists of 1 question. Answer ALL the questions.

Identify and correct any errors in the given Java code below. identify which lines (numbers on the left) have errors, describe the error and suggest how you will fix it. Ignore the absence of the main class or any surrounding structure. Just focus on correcting the code that is shown.

Question One [10 Marks]

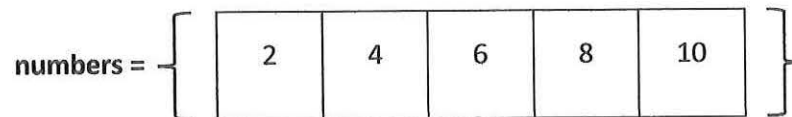
```
1. grade = 'A';
2. int score = 96.2;
3.
4. switch (g) {
5.     case 'A':
6.         System.out.println("Excellent");
7.         if (score >= 95) {
8.             System.out.println("Outstanding performance!");
9.         }
10.        break;
11.
12.        'B':
13.        System.out.println('Good');
14.        if (score >= 85) {
15.            System.out.println("Very good!");
16.
17.        break;
18.
19.        case "C":
20.            System.out.println("Average");
21.            break;
22.
23.        case 'D':
24.            System.out.println("Below average");
25.
26.
27.        case 'F':
28.            System.out.println("Failing grade")
29.            break;
30.
```

```
31.     default:
32.         System.out.println("Invalid grade");
33.
```

*This section consists of 4 questions. Answer **ALL** the questions.*

Question One [8 Marks]

Given the array below called numbers,



Write a complete Java program that performs the following tasks:

Create an integer array called **numbers**, that comes initialised/populated with **5 elements**, as shown above. **Using a loop**, iterate through each element of the array, and square each element (i.e., multiply the element by itself) and store the result in another array called **myNumbers**. After squaring all the elements and storing them in the array called **myNumbers**, **use a loop** to print the squared elements/numbers from the array called **myNumbers** to the console.

Sample Run

Squared array elements:

4 16 36 64 100

Question Two [5 Marks]

You're tasked with developing a simple interest calculator for a bank. The program should prompt the user to enter the initial deposit amount, the annual interest rate (expressed as a percentage), and the number of years the money will be invested. The initial deposit amount and the annual interest rate must be decimal numbers. Using these inputs, calculate the final amount using the following simple interest formula:

$$\text{Final Amount} = \text{Principal} + (\text{Principal} \times \text{Rate} \times \text{Time}) / 100.$$

After calculating the final amount, the program should check if the final amount exceeds N\$15 000. If it does, print "High Return", otherwise, print "Standard Return". Your program must also print the final amount to the console. Write a complete java program that performs these tasks.

Question Three [9.5 Marks]

Write a Java program that will accept 5 students in total from the user and count the number of fulltime and parttime students respectively. The program should prompt the user to enter "FT" for fulltime students and "PT" for parttime students. If anything other than "FT" or "PT" is entered, reject the input and print an error message. After all valid entries, print the number of fulltime and parttime students respectively to the console. The program should only accept uppercase letters, for example, "FT" not "ft" and "PT" not "pt".

NOTE: DO NOT USE ARRAYS

Sample Run

```
Enter study mode for student 1 (FT for Fulltime, PT for Parttime): FT
Enter study mode for student 2 (FT for Fulltime, PT for Parttime): FT
Enter study mode for student 3 (FT for Fulltime, PT for Parttime): GH
Invalid input. Please enter only 'FT' or 'PT'.
Enter study mode for student 3 (FT for Fulltime, PT for Parttime): pt
Invalid input. Please enter only 'FT' or 'PT'.
Enter study mode for student 3 (FT for Fulltime, PT for Parttime): PT
Enter study mode for student 4 (FT for Fulltime, PT for Parttime): FT
Enter study mode for student 5 (FT for Fulltime, PT for Parttime): PT
```

--- Total Student Summary ---

Total Fulltime Students: 3

Total Parttime Students: 2

Question Four [21.5 Marks]

A telecom company gives its subscribers 3072 MB for 7 days for a specific fee. Write a java program for the telecom company that does the following:

1. Prompt the user to enter how much data (in MB) was used each day, for 7 days. **Use a loop for your solution.**
2. Store each day's data in an array called **data**. **Use a loop for your solution.**
3. Warn the user if they exceed 80% of the weekly 3072 MB in each day.

Also create a method named **calcDataUsage()** that accepts the **data array** as a parameter. The **calcDataUsage()** method should do the following:

1. Calculate the total data used in 7 days. **Use a loop for your solution.**
2. Print the total data used in 7 days to the console.
3. Print the message "You have exceeded your weekly data!", if the total data used in 7 days exceeds 3072 MB.
4. Print to the console how many days the data used was:
 - Under 300 MB
 - Over 300 MB

YOU MUST USE LOOPS FOR YOUR SOLUTION.

NOTE: The logic to calculate and print the total data used, to print the message "You have exceeded your weekly data!" and how many days the data used was under 300 MB, and how many days the data used was over 300 MB must be implemented in a separate method called **calcDataUsage()**.

***** END OF EXAM *****