



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

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

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| <b>QUALIFICATION:</b> BACHELOR OF COMPUTER SCIENCE, BACHELOR OF INFORMATICS |                             |
| <b>QUALIFICATION CODE:</b> 07BCMS, 07BAIT                                   | <b>LEVEL:</b> 5             |
| <b>COURSE:</b> INTRODUCTION TO COMPUTING                                    | <b>COURSE CODE:</b> ICG511S |
| <b>DATE:</b> JUNE 2024  | <b>PAPER:</b> THEORY        |
| <b>DURATION:</b> 3 HRS  | <b>MARKS:</b> 75            |

| <b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b> |                         |
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| <b>EXAMINER(S)</b>                                  | <b>Mr MIKE KALE</b>     |
| <b>MODERATOR</b>                                    | <b>Mr PETER GALLERT</b> |

**THIS QUESTION PAPER CONSISTS OF 8 PAGES**  
(Including this front page)

**INSTRUCTIONS TO STUDENTS**

1. Read all the questions, passages, scenarios, etc., carefully before answering.
2. Answer all the questions.
3. Number each answer clearly and correctly.
4. Write neatly and legibly.
5. Making use of any crib notes may lead to disqualification and disciplinary action.
6. Use the allocated marks as a guideline when answering questions.
7. Looking at other students' work is strictly prohibited.

- *Answer all the questions in the provided booklet.*
- *The section consists of 10 questions.*

1. Which of the following variable naming convention is **NOT** correct. **[1 Mark]**

- A. myvehicle
- B. My Vehicle
- C. myVehicle
- D. my\_vehicle

2. The process of assigning a variable its first value is known as. **[1 Mark]**

- A. Assignment
- B. Declaration
- C. Initialisation
- D. Incrementation

3. Which of the following statements is correct. **[1 Mark]**

- A. `a[] = {'a', 'c', '2', "d"}`
- B. `a[] = {"a", "c", '2', "d"}`
- C. `a[] = {'a', 'c', '2', 'd'}`
- D. `a[] = {'a', 'c', '2', 1}`

4. What is the output of the following function. [1 Mark]

Start

add (2, 4)

End

```
add (a, b) {  
    b = 2  
    c = a+ b  
    Display c  
}
```

- A. 6
- B. 4
- C. 10
- D. 7

5. The smallest group of tasks or operations with a single purpose are known as. [1 Mark]

- A. Loops
- B. Global scope
- C. Cohesion
- D. Functions

6. A variable behaves like the value it stores. [1 Mark]

- A. True
- B. False

7. If  $a = 7$ ,  $b = 2$ , what will the following expression evaluate to. [1 Mark]

$a != b$  AND  $a < 2$

- A. True
- B. False

8. A **WHILE** loop and a **DO - WHILE** loop are both leading decision loops. [1 Mark]

- A. True
- B. False

9. An index is used to access an element in an array. [1 Mark]

- A. True
- B. False

10. A global variable is a variable that is declared inside a function and is accessible to all functions. [1 Mark]

- A. True
- B. False

- Answer all the questions in the provided booklet.
- The section consists of 7 questions.

1. Re-write the following **DO - WHILE** loop using a **WHILE** loop. [5 Marks]

```
count = 20
DO
    IF(count > 30) THEN
        Display count
    ENDIF
    count = count + 1
WHILE (count < 50)
ENDDO
```

2. Write a pseudocode that will help a user at NUST to determine whether the student has passed the ICG511S course or not. The program should accept the student's name, the semester mark, and the examination mark, then calculate the final mark. The program should then determine whether the student has passed or not. The program should display the student's name and the final mark to the screen. Use correct variable naming convention in your pseudocode.

**The decision is made based on the following criteria:**

- If the final mark is 50 percent and above, and the examination mark is 40 percent and above, then the student has passed. The program should display "Pass", if the student has passed, otherwise, it should display "Fail".
- If the final mark is 50 percent and above, but the examination mark is less than 40 percent, then the student has failed. The program should display "Fail. Sub minimum not obtained."

Below is the formula to calculate the **final mark**.

$$\text{Final Mark} = (\text{Semester Mark} * 0.4) + (\text{Examination Mark} * 0.6)$$

- a. Identify the inputs and outputs in the problem above. [5 Marks]
- b. Write a complete pseudocode for the problem above. [9 Marks]

3. Given the array below,

|         |   |   |    |   |   |    |   |   |
|---------|---|---|----|---|---|----|---|---|
|         | 0 | 1 | 2  | 3 | 4 | 5  | 6 |   |
| num = { | 5 | 2 | 10 | 7 | 8 | 15 | 4 | } |

- a. Write a pseudocode to display the elements from index 2 to index 4 in the array above. [4 Marks]
4. Write a pseudocode that will count the positive and negative numbers that are received as input from the user. The program should allow the user to enter 10 numbers in total (positive and negative) continuously. The count of positive numbers and the count of negative numbers should then be displayed to the screen. Use a **WHILE** loop for your solution. [8 Marks]
5. Convert the following Linear IF Statement to a **Case Structure pseudocode**. [5 Marks]

Start

Prompt user for the level in algorithms

Get level

IF (level == 1) THEN

userLevel = "Beginner"

ELSE IF (level == 2) THEN

```
        userLevel = "Intermediate"
ELSE IF (level == 3) THEN
        userLevel = "Expert"
ELSE
        userLevel = "Invalid level"
ENDIF
ENDIF
ENDIF
DISPLAY userLevel
End
```

6. Convert the following pseudocode into a flowchart. **[9 Marks]**

```
Start
    Prompt for language code
    Get languageCode

    IF(languageCode == 'E') THEN
        DISPLAY "You have chosen English."
    ELSE IF(languageCode == 'A') THEN
        DISPLAY "You have chosen Afrikaans."
    ELSE IF(languageCode == 'O') THEN
        DISPLAY "You have chosen Otjiherero."
    ELSE
        DISPLAY "Invalid choice."
    ENDIF
ENDIF
ENDIF
ENDIF
End
```

7. Create a function named **lowestMark()**, that receives two arrays as parameters and return and display the name of the student with the lowest mark. Your program should allow the user to enter the names of 10 students and their test marks and store them in two separate arrays. One array is for the student's name, and the other array is for the student's test mark. Your solution must include a function call. **[20 Marks]**

\*\*\*\*\* End of the Paper \*\*\*\*\*