



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF COMPUTING AND INFORMATICS
DEPARTMENT OF COMPUTER SCIENCE**

QUALIFICATION: BACHELOR OF COMPUTER SCIENCE, BACHELOR OF INFORMATICS	
QUALIFICATION CODE: 07BCMS, 07BAIT	LEVEL: 5
COURSE: INTRODUCTION TO COMPUTING	COURSE CODE: ICG511S
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DURATION: 2 HOURS	MARKS: 60

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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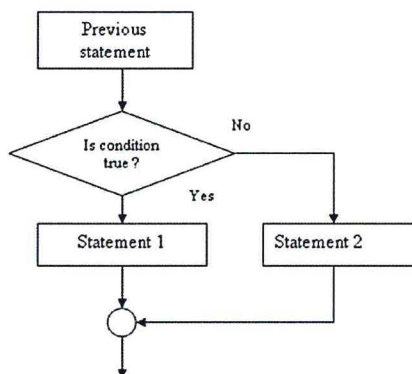
INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Read all the questions carefully before answering.3. Number the answers clearly

THIS QUESTION PAPER CONSISTS OF 5 PAGES
(Including this front page)

SECTION A: Multiple choices and True and false Questions [10 Marks]

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

1. Which of the following statements is correct?
 - A. `number * 6 = product`
 - B. `'e' = vowel`
 - C. `lastName = 'Mwanawasa'`
 - D. `isPresent = "true"`
 - E. `count++`
2. A string is...?
 - A. A whole number
 - B. Letters, numbers, or punctuation
 - C. A number with a decimal
 - D. True or False
3. What is the difference between a flowchart and pseudocode?
 - A. A flowchart is diagrammatic whilst pseudocode is written in a programming language (eg. Pascal or Java)
 - B. A flowchart is a diagrammatic description of an algorithm whilst pseudocode is a textual description of an algorithm
 - C. A flowchart is textual, but pseudocode is diagrammatic
 - D. A flowchart and pseudocode are the same thing
4. Which type of control structure is shown in the below flowchart?



- A. Repetition
- B. Sequential

- C. Selection
 - D. Case
5. In a flowchart, a calculation (process) is represented by _____?
- A. diamond
 - B. Rectangle
 - C. Parallelogram
 - D. A circle
6. Which of the following statements are correct about 6 used in the program?
- ```
int num[6];
num[6]=21;
```
- A. In the first statement 6 specifies a particular element, whereas in the second statement it specifies a type.
  - B. In the first statement 6 specifies an array size, whereas in the second statement it specifies a particular element of array.
  - C. In the first statement 6 specifies a particular element, whereas in the second statement it specifies an array size.
  - D. In both the statement 6 specifies array size.
7. While comparing two variables, their datatypes / format should be the same.
- A. True
  - B. False
8. You can have an IF without an else but not an else without an IF.
- A. True
  - B. False
9. Sequential, selection and iterative control are all based on a given condition.
- A. True
  - B. False
10. To check multiple conditions, nested control structure can be used.
- A. True
  - B. False

**SECTION B: Structured Questions [50 Marks]**

- Answer all the questions in the provided booklet.
- The section consists of 5 questions.

1. A pseudocode algorithm assigns values to three variables as follows:

GateOpen = FALSE

Alarm = TRUE

PowerFail = TRUE

Evaluate the expressions given in the following table:

| Expression                            | Evaluates to |
|---------------------------------------|--------------|
| Alarm OR NOT PowerFail                |              |
| NOT (Alarm AND PowerFail)             |              |
| (GateOpen OR Alarm) AND PowerFail     |              |
| (GateOpen AND Alarm) OR NOT PowerFail |              |

[4 marks]

2. Unnest the following nested if statement pseudocode snippets:

[3 marks]

```
IF (subject <> "ICG") THEN
 If (testMarks >50) THEN
 Display "You are not an FCI student."
 END IF
END IF
```

3. Identify the inputs, process, and outputs for a program that is required to determine the average grade of your class. [4 Marks]

4. Convert the following case structure into a linear if statement: [4 Marks]

```
CASE OF (record_code)
'A': increment counter_A
'B': increment counter_B
'C': increment counter_C
default: increment error_counter
ENDCASE
```

5. Consider the following formula:  $N = X \cdot X / (1 - X)$ . The formula is used to calculate N. The calculation is repeated until a sentinel of X=0 is entered. Create a program that will show the repeated calculation using pseudocode. The program should receive the value of X. An error message should be display if 1 is entered as a value of X. The program should then print the value of X and N. [6 marks]

6. Convert the following pseudocode into a follow chart: [12 Marks]  
START

*Prompt the user for the house value*

*Get houseValue*

*Prompt the user for the amountOfWaterUsed*

*Get amountOfWaterUsed*

*monthlyAmount=0*

*IF (houseValue > 500 000) THEN*

*monthlyAmount= (amountOfwaterUsed\*20) +(0.05\*houseValue)*

*ELSE IF (houseValue > 300 000) AND (houseValue < 500 000) THEN*

*monthlyAmount= (amountOfwaterUsed\*20) +(0.03\*houseValue)*

*ELSE*

*monthlyAmount= (amountOfwaterUsed\*20)*

*END IF*

*END IF*

*Display monthlyAmount*

*END*

7. Create a program using pseudocodes which takes a temperature input over a 100-day period (once per day) and display the number of days when the temperature was below 20C and the number of days when the temperature was 20C and above. [10 marks]

8. Write a program using pseudocodes algorithm that would enable the user to enter student marks for 100 students. The program should then determine whether the mark entered is a pass or fail given that the pass mark is 50. [8 Marks]

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