



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF COMPUTING
DEPARTMENT OF COMPUTER SCIENCE
2024_2 EXAMINATION

COURSE CODE: CIT301

COURSE TITLE: STRUCTURED PROGRAMMING

COURSE CREDIT: 3 UNITS

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER THREE QUESTIONS

Q1.

(a) Differentiate between formal and local arguments?

4 marks

(b) Using a diagram, illustrate modular programming?

3 marks

(c) How does procedural programming achieve encapsulation and abstraction?

4 marks

(e) A payroll company invites you to develop a program for computing the salaries of workers. The salary or NET PAY is given as (GROSS PAY – TAX). The GROSS PAY consists of the following: BASIC SALARY, HOUSING ALLOWANCE, and RESPONSIBILITY ALLOWANCE. TAX is 5% of BASIC SALARY. Using the first four phases of program development and respective tools, practically illustrate this process.

14 marks

Q2.

(a) Discuss 4 characteristics of high-level languages?

8 marks

(b) Distinguish between syntax and semantic/logic errors?

5 marks

(c) List 4 examples of high-level languages?

2 marks

Q3.

(a) Using [2, 5, 4, 9, 2, 7, 10, 4]. List the number of iterations for the following iterations:

Iteration 1: j = 7; Iteration 2: j = 6; Iteration 3: j = 5; Iteration 4: j = 4

Iteration 5: j = 3; Iteration 6: j = 2; Iteration 7: j = 1

```
void bubble_sort (int arr[], int n) {  
    int i, j, temp;  
    for (i = 0; i < n-1; i++) {  
        for (j = 0; j < n-i-1; j++) {  
            if (arr[j] > arr[j+1]) {  
                // swap arr[j] and arr[j+1]  
                temp = arr[j];  
                arr[j] = arr[j+1];  
                arr[j+1] = temp;  
            }  
        }  
    }  
}
```

7 marks

(b) With examples differentiate between pre-increment and post-increment operator:

4 marks

(c) With a diagram illustrate the compilation and execution phase of C program?

4 marks

Q4(a) Describe with example operations, the following: arithmetic operations, relational operations, logical operations, and function call?

12 marks

(b) Complete the following table?

p	q	p&q	p q	p^q
0	0			
0	1			
1	0			
1	1			

3 marks

Q5.

(a) Write syntax segments illustrating the **if else** and **if else if** statements in C? Give examples?

10 marks

(b) Write a C function to compute the sum of n even numbers:

5 marks

Q6.

(a) Differentiate between the for and do-while loop structure? Illustrate these 2 constructs using a pseudocode?

7 marks

(b) List 3 important attributes of a function?

3 marks

(c) Complete the following table that describes the types of string function?

Type	Method	Description
char	strcpy(s1, s2)	Copy string
char		
int		
int		
char		
char		

5 marks