



NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF SCIENCES
COMPUTER SCIENCE DEPARTMENT
2023_2 EXAMINATIONS

CIT 734: OBJECT ORIENTED TECHNOLOGY

Credit: 3 units

TIME ALLOWED: 2½ Hours

INSTRUCTION: Answer Question 1 and any other FOUR (4) Questions

1(a) What is Polymorphism? (1 mark)

1(b) Describe the following terms (3 marks)

- i. An Object
- ii. A class
- iii. A method

1(c) What would be the correct variable type in which to store the following information? (4 marks)

i. Your age.

ii. The area of your backyard.

iii. The number of stars in the galaxy.

iv. The average rainfall for the month of January.

1(d) Write a short code in C++ that will be printing out ASCII characters based on their number codes. (4 marks)

1(e) Compare and contrast (8marks)

- i) Object Oriented Programming and Procedural programming
- ii) Modular Programming and Unstructured programming

1(f) What is the final output of this code snippet? (2 marks)

```
public class SwitchDemo2 {
    public static void main(String[] args) {
        int month = 2; int year = 2000; int numDays = 0;
        switch (month) {
            case 1:
            case 3:
            case 5:
            case 7:
            case 8:
```

```

case 10:
case 12:
numDays = 31; break;
case 4:
case 6:
case 9:
case 11:
numDays = 30; break;
case 2:
if (((year % 4 == 0) && !(year % 100 == 0)) || (year % 400 == 0) )
numDays = 29;
else numDays = 28; break;
System.out.println("Number of Days = " + numDays);
}
}

```

2(a) Write on the phases through which a properly engineered software product will pass through (4 marks)

2(b) What is Inheritance in OOP? (2 marks)

2(c) With the two classes defined below, using Java construct, show how class human will inherit class mammal (2 marks)

```

Mammal{
    Mammary gland;
    Hair;
    Warm blooded;
    Give_birth_alive ( );
}

Human{
    Two legs;
    Two arms;
    Run();
    Jump();
    Walk();
}

```

2(d). What are constructors and destructors in C++.? (2 marks)

2(e) What are the advantages of using a symbolic constant rather than a literal constant? (2 marks)

3(a) Write on each of the following operators in Java, giving examples of usage (8 marks)

- I Arithmetic Operators
- li Relational Operator
- lii Conditional Operators and
- lv Assignment Operators

3(b) Which of the following are valid variable names? (7 Marks) = 7 Marks

- a. Int
- b. AnInt
- c. I
- d. i1
- e. 1
- f. thun
- g. 2lthing
- h. ONE-HUNDRED

4(a) Iterate through the code snippet below by dry running it. Write the output(s) of the program.

(7 Marks)

```
public class ForDemo {
    public static void main(String[] args) {
        int [] arrayOfInts = {32, 87, 3, 589, 12, 1076, 2000, 8, 622, 127};
        for (int i = 0; i < arrayOfInts.length; i++) {
            System.out .print (arrayofInts [i] + System.out.println());
        }
    }
}
```

4(b) When can a class be referred to as an Abstract Class or concrete class? (2 marks)

4(c). Cite five factors that can be used to differentiate between an object and a class (5marks)

5(a) State four problems with the top-down design approach(4 marks).

5(b) Identify 4 advantages modular programming technique (4 marks)

5(c) Evaluate the code snippet below and write out the final output (2 marks)

```
public class IfElseDemo {
    public static void main(String[] args){
        inttestscore = 76;
        char grade;
        if (testscore >= 90) {
            grade = 'A';
        } else if (testscore >= 80) {
```

```
    grade = 'B';
  } else if (testscore >= 70) {
    grade = 'C';
  } else if (testscore >= 60) {
    grade = 'D'; }else{
    grade = 'F'; System.out.println("Grade+ grade);
  }
```

5(d) Consider the following code snippet below. What are the values of i and n after the code is executed? (7 Marks)

```
int i = 10;
for (j==1; j<=10; j++) {
    int n = (i++) +5;
}
```

6(a) Mention three underlying concepts of object-oriented programming, and explain them. (6 marks)

6(b) Explain the term system analysis and who is a system analyst? (4 Marks)

6(c) When do you refer to a programming language as Object-Oriented and explain the reasons for your answer. (2 Marks)