

BOWEN UNIVERSITY IWO, OSUN STATE

COLLEGE OF COMPUTING AND COMMUNICATION STUDIES COMPUTER SCIENCE PROGRAMME

B. SC. DEGREE SECOND SEMESTER EXAMINATION SESSION: 2022/2023

COURSE CODE: CIT 304 COURSE TITLE: PROGRAMMING WITH C#

COURSE CREDITS: 3 DATE: FRIDAY 21st JUNE 2023 TIME ALLOWED: 2½ HOURS

INSTRUCTION: Answer question one and three other questions.

1. a. i. Discuss Common Language Run-time (CLR) as is applicable to .Net Framework (2marks)
ii. List four components of CLR. (4marks)
iii. List and discuss three features of C# (9marks)
- b. i. Define class, static, void (3marks)
ii. Study and write the result of each of the following output statements:
- ```
class opera{
 static void Main(){
 byte a = 3;
 byte b = 5;
 Console.WriteLine(a | b);
 Console.WriteLine(a & b);
 Console.WriteLine(a ^ b);
 Console.WriteLine(a << 1);
 Console.WriteLine(a << 2);
 }
}
```
- (10marks)

2. a. i. Define Structured Programming and Unstructured Programming (4marks)  
ii. Mention and discuss three types of Structured Programming (9marks)
- b. The *formula* for the *volume of a cone* is  $V = \frac{1}{3} \pi r^2 h$  cubic units, where r is the radius of the circular base and h is the height of the cone. Using C# programming syntax to find the volume of the cone. Note the code must accept radius and height input from the console. (11marks)
3. a. i. Discuss Pointer in C# (6marks)  
ii. Using the C# operator *operand1 ? operand2 : operand3* (4marks)  
What will be results of the operator above?

- b. Study the formatted output below

```
class WritinOutConsole
{
 static void Main()
 {
 Console.WriteLine("{0:C2}", 123.456);
 Console.WriteLine("{0:D6}", -1234);
 Console.WriteLine("{0:E2}", 123);
 Console.WriteLine("{0:F2}", -123.456);
 Console.WriteLine("{0:N2}", 1234567.8);
 Console.WriteLine("{0:P}", 0.456);
 Console.WriteLine("{0:X}", 254);
 }
}
```

(14marks)

Write out the result of each of the output statement in C# in the codes above

4. a. i. Define Command Interpreter (2marks)  
ii. List two types of command interpreter and discuss each of them (6marks)  
iii. Write the command code that can be used on command interpreter to do the following:  
- create directory - change directory - delete directory (6marks)
- b. Write a C# code to find the factorial of any number between 1 – 20 (10marks)
5. a. i. Define Methods (2marks)  
ii. Discuss two reasons why methods is important in C# (4marks)  
iii. With example, discuss the concept of “invoking a method” (6marks)
- b. i. Define Array (2marks)  
ii. Describe how to declare an array and how can memory be allocated to an array.  
Give an for this (6marks)
- iii. Discuss two types of C# operators you know (4marks)
6. a. i. Define the following:  
(a) Encapsulation (b) Abstraction (c) Inheritance (6 marks)  
ii. State the main goal of Object Oriented Programming (2marks)
- b. i. Leap year occurs every four years with the month of February having 29<sup>th</sup> days. Write a  
program using C# programming codes to display leap year from 1960 to 2022 (8marks)  
ii. Using the formula  $A = 1/2(a+b)h$ , Write a program to calculate the area of a trapezium (8marks)