



(Knowledge for Development)

KIBABII UNIVERSITY

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**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**SUPPLEMENTARY/SPECIAL EXAMINATIONS
FOURTH YEAR SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF
BACHELOR OF SCIENCE
(COMPUTER SCIENCE)**

COURSE CODE : CSC 460E.

**COURSE TITLE : PROGRAMMING WITH C# &
.NET FRAMEWORK**

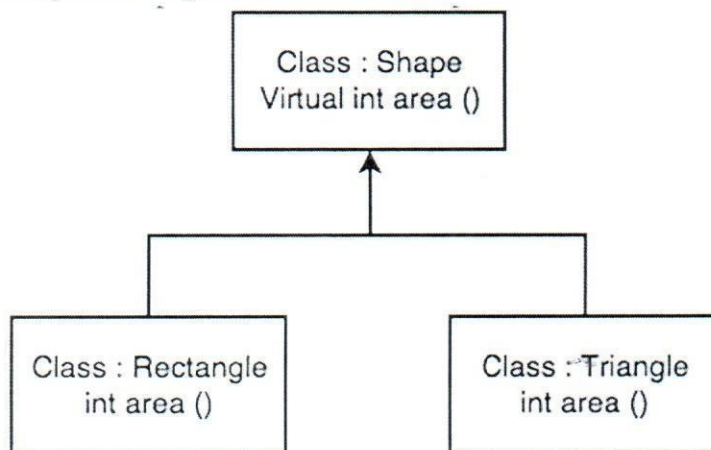
DATE: 03/02/2021 TIME: 11.00 A.M – 01.00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

- a) Define the following terms. [2Marks]
i. Namespace
ii. Encapsulation
- b) C# have a way of handling data through data types. Giving reasons, explain why data types are very important in C#. [4Marks]
- c) Operators in C# have been classified into four groups. State these groups while giving examples of each. [4Marks]
- d) Write a C# program that prompts the user to enter a positive integer. The program should display all numbers that can divide the number entered. If the user enters 8, then the output will be 1,2,4,8 [4Marks]
- e) Write a C# program that prompts the user to enter a positive integer; the program should then display every fourth odd number greater than 0 and less than the number entered. The output might look like: [6Marks]
Enter Positive Integer: 20
The output: 7,15
- f) Write a C# program that uses a function to calculate the GCD of two numbers passed as arguments. [4Marks]
- g) Write a C# program that uses necessary data members to compute area of each shape while implementing inheritance shown. [6Marks]



QUESTION TWO [20 MARKS]

- a) Differentiate between the following terms [4Marks]
i. Identifier and Variable
ii. Return and Break Statement
- b) Any variable must be declared and initialized before being used. Explain using examples relevance of this to the compiler. [4Marks]
- c) Write a C# program that prompts the user for two integer values and swap them without using the third variable. [4Marks]
- d) Write a program in C# Sharp to copy the elements of one array into another array. The elements should then be displayed in reverse order. [8Marks]

QUESTIONTHREE [20 MARKS]

- a) Define the following terms [2 Marks]
- i. Class
 - ii. Constructor
- b) Discuss the importance of classes in C# programming. [4Marks]
- c) What will be the result of the following code? [4Marks]

```
class P
{
}
class Q : P
{
}

class A
{
    public void abc(Q q)
    {
        Console.WriteLine("abc from A");
    }
}

class B : A
{
    public void abc(P p)
    {
        Console.WriteLine("abc from B");
    }
}

static void Main(string[] args)
{
    B b = new B();
    b.abc(new Q());
    Console.ReadLine();
}
```

- d) Method overloading is taken to be one form of polymorphism. Explain using examples how this occurs. [4Marks]
- e) Consider the class below

```
public class Point
{
    public int X { get; set; }
    public int Y { get; set; }
    public Point(int xPos, int yPos)
    {
        X = xPos;
        Y = yPos;
    }
}
```

There are 3 instances of the class shown below. Will the following initialization of the third instance work? If it won't, what should be done? [6Marks]

```
Point ptOne = new Point(15, 20);
Point ptTwo = new Point(40, 50);
Point ptThree = ptOne + ptTwo;
```


QUESTION FOUR [20 MARKS]

- a) Define the following terms [2Marks]
i. Exception
ii. Generic Types
- b) Discuss four steps of handling exceptions in C#. [4Marks]
- c) Illustrate using examples the difference between an error and exception. [4Marks]
- d) Write a generic class that has two instant variables. The class should have two constructors, getters and setters. Write a driver program that will test the class defined. [6Marks]
- e) Using examples of your choice, explain how generic method is defined and used. [4Marks]

QUESTION FIVE [20 MARKS]

- a) Define the following terms [2Marks]
i. GUI
ii. Events
- b) GUI is said to be a common feature in modern systems. Explain how C# can be used to create a GUI. [4Marks]
- c) A good GUI requires good planning, explain the process of coming up with a good GUI. [6Marks]
- d) Events are powerful features of C#, explain the life cycle of event processing in C#. [2Marks]
- e) Write a C# program that simulates a clock with hour, minute and second hand. [6Marks]