BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN ☐☐☐☐☐☐☐☐☐☐   Course Code | 2 | 1 | C | S | 5 | 8 | 1 |

Fifth Semester B.E. Degree Examinations, September / October 2024
C# AND .NET FRAMEWORK

Duration: 2 hr   **Max. Marks: 100**

Instructions to the Candidates:

- *All questions are compulsory.*
- *Each question carries 1 mark.*
- *Use only black ball point pen.*

- *Darkening more than one circles for the same question makes the answer invalid.*
- *Damaging/overwriting, using whiteners on the OMR are strictly prohibited.*

Q. No	*Question*

1 Which keyword is used to define a namespace in C#?
A) class   B) namespace   C) using   D) public

2 What does the **Console.ReadLine** method do?
A) Reads input from the user   B) Writes output to the console with a new line
C) Clears the console screen   D) Executes a command in the console

3 Which file contains the XAML code for the user interface in a UWP application?
A) MainPage.xaml   B) Program.xaml   C) UI.xaml   D) App.xaml

4 What does the **$** symbol at the start of a string indicate in C#?
A) It denotes a string literal   B) It signifies a verbatim string
C) It indicates an interpolated string   D) It marks a string as a format string

5 Which naming convention is recommended for variables in C#?
A) Hungarian notation   B) Camel_Case   C) Pascal _Case   D) snake_case

6 What is the output of the following C# code snippet?

```
int x = 10;
Console.WriteLine(x++);
Console.WriteLine(++x);
```

A) 10, 12   B) 10, 11   C) 11, 12   D) 11, 11

7 In C#, where are global variables typically declared?
A) Inside a method   B) Inside a loop
C) Inside a class but outside any method   D) Inside a namespace

8 In C#, what is the purpose of the **out** keyword in a method parameter?
A) Declares a method as asynchronous   B) Specifies that the parameter is optional
C) Specifies the parameter as an output variable   D) Defines a method as a property

9 What does the following method declaration indicate?

```
void Display(string name = "Guest")
{
    Console.WriteLine ($"Hello, {name}!");
}
```

A) method named **Display** with a mandatory parameter
B) method named **Display** with an optional parameter initialized to "Guest"
C) method named **Display** with a named argument of "Guest"
D) method named **Display** with a default value of null

10 What is method overloading in C#?
A) Defining multiple methods with the same name but different return types
B) Defining multiple methods with the same name but different access modifiers
C) Defining multiple methods with the same name but different parameter lists
D) Defining multiple methods with the same name but different classes

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI– Performance Indicator)

11 Consider the following C# method:

```
void Display Info(string name, int age, string city)
{
   Console.WriteLine($"Name: {name}, Age: {age}, City: {city}");
}
```

A) Display Info("Alice", "New York", 25);
B) Display Info("Bob", city: "Los Angeles", age: 30);
C) Display Info(age: 28, city: "Chicago", "Eve");
D) Display Info(name: "Charlie", 40, "Houston");

12 What happens if no case matches the value of the controlling expression in a switch statement?
A) The program throws a runtime error
B) The program executes the default case
C) The program exits the switch statement
D) The program continues to execute the next case block

13 Which symbol is used to represent the ternary operator in C#?
A) +   B) *   C) -   D) ?:

14 Is the following C# program correct?

```
using System;
class Program
{
   static void Main()
   {
      int x = 10;
      string y = "5";
      if (x > 0)
         Console.WriteLine(x + y);
      else if (x < 0)
         Console.WriteLine(y);
      else
         Console.WriteLine("Zero");
   }
}
```

A) Yes, answer is 5   B) Yes, answer is Zero   C) Yes, answer is 105   D) No, error

15 Which keyword is used to exit a loop prematurely in a **do-while** loop in C#?
A) stop   B) end   C) break   D) exit

16 When should you use a for each loop instead of a for loop?
A) For iterating over a collection of items   B) For controlling the iteration step size
C) For initializing loop variables   D) For using a loop counter

17 What will be the output of the following C# code?

```
int i = 0;
while (i < 10)
{
   if (i % 2 == 0) {
                  i++;
                  continue;
               }
   Console.WriteLine(i);
   i++;
}
```

A) 0 2 4 6 8   B) 0 1 2 3 4 5 6 7 8 9   C) 1 3 5 7 9   D) 1 2 3 4 5 6 7 8 9

18 Which block in a try-catch statement is optional?
a) try   b) catch   c) finally   d) None

19 Which of the following statements about the **throw** keyword in C# is true?
A) It is used to catch specific types of exceptions
B) It is used to explicitly throw an exception   C) It is used to suppress exceptions
D) It is used to improve the performance of exception handling

20 Which keyword is used to indicate the start of a block of code where exceptions might occur in C#?
A) start   B) begin   C) try   D) attempt

21 What is the purpose of using partial classes in C#?
A) To create classes that cannot be inherited
B) To allow a class's members to be divided across multiple source files
C) To enforce encapsulation within a class   D) To define abstract classes

22 Which keyword is used to create a new instance of a class?
A) static   B) create   C) instance   D) new

23 How many static constructors can a class have in C#?
A) Only one   B) Multiple
C) None   D) Depends on the number of static variables

24 Which of the following best describes the below given code snippet?
var person = new { Name = "John", Age = 30 };
A) Abstract class definition   B) Anonymous class definition
C) Partial class implementation   D) Static class definition

25 Which of the following is the correct way to declare a constant integer named **MAX_SIZE** with a value of 100?
A) int MAX_SIZE = 100   B) const int MAX_SIZE = 100;
C) constant int MAX_SIZE = 100;   D) int MAX_SIZE := 100;

26 What happens if heap memory is exhausted in C#?
A) The program crashes with a runtime error
B) The operating system automatically expands the heap memory
C) The new operator throws an Out Of Memory Exception
D) The program starts using stack memory instead

27 Which keyword is used to declare a nullable value type in C# ?
A) nullable   B) void   C) null   D) ?

28 In C#, value types are stored in:
A) Stack   B) Heap   C) Both stack & heap   D) None of the above

29 Which C# operator is primarily used for type checking?
A) as   B) is   C) cast   D) type of

30 What does the following code snippet demonstrate?
```
object o = 42;
int i = (int)o;
```
A) Unboxing   B) Boxing   C) Casting   D) Initialization

31 In C#, can structures have parameterized constructors?
A) Yes   B) No
C) Only if they are declared as static structures   D) Only if they have default constructors

32 In the enum declaration **enum Colours {Red, Green, Blue=3}**, What is the value of **Green**?
A) 0   B) -1   C) 1   D) 2

33 In C#, structures cannot have:
A) Inheritance   B) Destructors   C) Finalizers   D) All of the above

34 When should you use an enumeration instead of a class in C#?
A) When defining a set of related constants   B) When implementing inheritance
C) When creating complex data structures   D) When defining mathematical operations

35 Which of the following is the correct way to declare and initialize a two-dimensional array in C#?
A) int[,] arr = new int[2, 3] { { 1, 2, 3 }, { 4, 5, 6 } };
B) int[][] arr = { { 1, 2, 3 }, { 4, 5, 6 } };
C) int[][] arr = new int[2, 3] { { 1, 2, 3 }, { 4, 5, 6 } };
D) int[] arr = { { 1, 2, 3 }, { 4, 5, 6 } };

36 What is the maximum number of parameter arrays allowed in a single method signature in C#?
A) 2   B) 1   C) 3   D) No limit

37 What is the output of the following g C# program?

```
using System;
struct Person
{
  public int age;
  public int sal;
}
class Program
{
  static void Main(string[] args)
  {
    Person p;
    Console.WriteLine(p.age + ", " + p.sal);
  }
}
```

A) 1,1   B) Compilation Error   C) 0,0   D) Runtime Error

38 What does the below C# code output?

```
using System;
class Program
{
  static void Main(string[] args)
  {
    int[] numbers = { 1, 2, 3, 4, 5 };
    Console.WriteLine (numbers. Length);
  }
}
```

A) 4   B) 6   C) 5   D) compilation error

39 What is the output of the following C# code snippet?

```
int[] num1 = {10, 20, 30, 40, 50};
int[] num2 = new int[numbers. Length];
Array. Copy (num1, num2, numbers. Length);
Console.WriteLine(num2[1]);
```

A) 30   B) 20   C) 10   D) None

40 What is the correct way to declare a method that accepts an array of integers as a parameter?
A) void My Method(int[] array)   B) void My Method(int array[])
C) void My Method(int array)   D) void My Method(array[] int)

41 Can a jagged array have different lengths for each row in C#?
A) Yes, it is one of the defining characteristics of jagged arrays
B) No, all rows must have the same length
C) Only if explicitly specified during initialization
D) Only if using a multidimensional array

42 Can we use the params keyword with multidimensional arrays?
A) Yes, it works without any issues   B) No, it throws a compilation error
C) Yes, but it requires explicit casting   D) Yes, it automatically converts into a 1-D

43 Which access modifier cannot be used with a virtual method in C#?
A) public   B) private   C) protected   D) internal

44 To enable method overriding in C#, which keyword is used in the derived class?
A) virtual   B) override   C) new   D) base

45 In C#, which type of method allows runtime polymorphism?
A) Static methods   B) Sealed methods   C) Virtual methods   D) Abstract methods

46 Consider the following code snippet:

```
public static void Display(params object[] values)
{
    for each (object obj in values)
    {
        Console. Write(obj);
    }
}
```

What is the output of the following method call :

Display("Hello", 42, true);

A) Hello 42 True   B) Hello, 42, True
C) It will throw a compilation error   D) It will NOT print anything

47 In C#, when defining a method with params int [] parameters, which data type can passed as arguments?

A) Only value types   B) Only reference types
C) Both value types and reference types   D) Only predefined types

48 What happens if a method with **params** parameter is called without any arguments?
A) It throws a compilation error.
B) It executes without error, but the method body is not executed.
C) It executes, and the method body receives an empty array.
D) It executes, and the method body receives a null value.

49 Which of the following is a syntax for calling a base class constructor from a derived class?
A) super()   B) base()   C) call Base()   D) parent()

50 What will be the output of the below C# code?

```
using System;
class Base Class
{
    public void Display()
    {
        Console.WriteLine("Base Class");
    }
}
class Derived Class : Base Class
{
    new public void Display()
    {
        Console.WriteLine("Derived Class");
    }
}
class Program
{
    static void Main(string[] args)
    {
        Base Class obj = new Derived Class();
        obj.Display();
    }
}
```

A) Base Class   B) Derived Class   C) Compilation Error   D) Runtime Error

51 What is the correct syntax for declaring an interface in C#?
A) class My Interface { }   B) interface My Interface { }
C) abstract interface My Interface { }   D) My Interface { }

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI– Performance Indicator)

52 An abstract class in C#:
A) Can be instantiated
B) Can't contain any abstract methods
C) Must be inherited by another class
D) Can't contain any concrete methods

53 Which of the following limitations applies to interfaces in C#?
A) Interfaces cannot include destructors
B) Interfaces cannot contain fields
C) Interfaces cannot define constructors
D) All of the above

54 Which of the following access modifiers can be used for methods implementing an interface?
A) public   B) private   C) protected   D) internal

55 In C#, which keyword is used to prevent inheritance of a class?
A) abstract   B) override   C) overload   D) sealed

56 What is the purpose of garbage collection in C#?
A) To free memory occupied by unused objects
B) To allocate memory for new objects
C) To manage resources such as file handles and database connections
D) To optimize code execution speed

57 How do you define destructors in C#?
A) Using "finalize" keyword
B) Using "~" followed by class name
C) Using "destroy" keyword
D) Using "#" followed by class name

58 What is the purpose of the **GC. Collect**() method in C#?
A) Manages Resources
B) Releases unused memory manually
C) Initializes new objects
D) Prints garbage collection statistics

59 Which interface in C# provides a mechanism for releasing unmanaged resources?
A) IReleaseable()   B) IDisposable()   C) ReleaseResources()   D) ICleanup()

60 How does the compiler translate the **using** statement in Resource Management?
A) Into a try-catch block
B) Into a try-finally block
C) Into a try-except block
D) Into a try-throw block

61 What will happen when you try to compile and run the following code snippet?

```
public class MyClass
{
    private int n;

    public int Num
    {
        get { return n; }
    }
}
class Program
{
    static void Main(string[] args)
    {
        MyClass a = new MyClass();
        Console.WriteLine(a. Num );
    }
}
```

A) Compilation error   B) Prints 10   C) Runtime error   D) Prints 0

62 Which of the following is used to specify an automatic property in an interface without providing a body for the get or set accessor?

A) null   B) bodyless   C) semicolon   D) abstract

63 Which keyword you should use when declaring property to override the property implementations in a derived class?

A) override   B) virtual   C) sealed   D) abstract

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI– Performance Indicator)

64 Can properties be declared as **const** in C#?
A) Yes, Only if the property is read-only   B) Yes
C) Yes, Only if the property is write-only   D) No

65 Which among the following is the correct syntax for initializing an object using properties?
A) Rectangle r = new Rectangle(Width = 10, Height = 20);
B) Rectangle r = new Rectangle { Width = 10, Height = 20 };
C) Rectangle r = new Rectangle();   r.Width = 10; r.Height = 20;
D) Rectangle r;   r.Width = 10; r.Height = 20;

66 What is an indexer in C#?
A) A smart array   B) A method   C) A property   D) A loop construct

67 Can indexers in C# be used as ref or out parameters?
A) Yes, indexers can be used as ref parameters.
B) Yes, indexers can be used as out parameters
C) No, indexers cannot be used as ref or out parameters
D) Only indexers with specific attributes can be used as ref or out parameters

68 Can indexers be used with interfaces in C#?
A) Yes   B) No   C) Sometimes   D) It depends

69 What is the result of the bitwise XOR operation (^) between 10 and 5 ?
A) 0   A) B) 11   B) C) 14   C) D) 15

70 What will be the output of the below C# code?

```
class MyClass
{
    private string[] data = new string[10];
    public string this[int index]
    {
        get { return data[index]; }
        set { data[index] = value; }
    }
}
class Program
{
    static void Main(string[] args)
    {
        MyClass obj = new MyClass();
        obj[0] = "Hello";
        Console.WriteLine(obj[0]);
    }
}
```

A) 0   B) Hello   C) null   D) Compilation Error

71 What is the primary advantage of using generics over generalized classes with object parameters?
A) Improved performance   B) Increased type safety
C) Reduced memory consumption.   D) All of the above

72 Which namespace in the .NET Framework provides the IComparer<T> interface?
A) System.Collections;   B) System.Collections.Generic;
C) System;   D) System.Linq;

73 Which method returns a list of all matching objects in the List<T> class?
A) Find()   B) FindLast()   C)FindAll()   D) Contains()

74 In a stack, which operation removes and returns the element at the top of the stack?
A) Push   B) Pop   C) Peek   D) Remove

75 Which keyword is used to define an iterator in C#?
A) yield   B) iterate   C) next   D) forward

76 What will be the output of the below C# code?

```
class MyClass<T> where T : struct
{
  public T Data { get; set; }
  public void Display()
  {
    Console.WriteLine(Data);
  }
}
class Program
{
  static void Main(string[] args)
  {
    MyClass<int> intobj = new MyClass<int>();
    intobj.Data = 10;
    intobj.Display();
  }
}
```

A) 0 B) Runtime Error C) 10 D) Compilation Error

77 What does the constraint "**where T : class** " specify in C# Generics?

A) It restricts T to be a value type B) It restricts T to be a reference type

C) It restricts T to be an interface D) It restricts T to be a class

78 Which keyword is used to specify a covariant type parameter in a generic interface?

A) out B) in C) contravariant D) covariant

79 Which collection class is implemented as a doubly linked list?

A) Dictionary<TKey, TValue> B) HashSet<T>

C) List<T> D) LinkedList<T>

80 What is the output of the following code?

HashSet<string> colors = new HashSet<string>(new string[] { "red", "blue", "green" });
colors.Add("yellow");
colors.Remove("blue");
Console.WriteLine(colors.Contains("green"));

A) True B) False C) Error D) Undefined

81 What does the Count property return in a collection?

A) Number of keys B) Number of elements

C) Number of values D) Number of dimensions

82 What does the Reset () method of the IEnumerator interface do?

A) Resets the enumerator B) Moves to the previous element

C) Moves to the next element D) Ends the enumeration

83 What is the purpose of an enumerator in C#?

A) To define collection classes B) To iterate over the elements of a collection

C) To implement event handling D) To declare delegates

84 Which one simplifies the process of listing items in a collection in C#?

A) for loop B) while loop C) for each loop D) do-while loop

85 What does the Get Enumerator () method return in C#?

A) An enumerator object B) The current element in the collection

C) The collection itself D) The next element in the collection

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI– Performance Indicator)

86 How is a delegate declared in C#?

A) Using the method keyword   B) Using the delegate keyword

C) Using the event keyword   D) Using the class keyword

87 What does the following C# code snippet demonstrate?

        public event EventHandler MyEvent;

A) Declaration of an event   B) Declaration of a lambda expression

C) Declaration of a delegate type   D) Declaration of a generic class

88 Which delegate type refers to methods that return a boolean value?

A) Action   B) Func   C) Predicate   D) EventHandler

89 Which operator is used to add a method to multicast delegate in C#?

A) Using the += operator   B) Using the -= operator

C) Using the / = operator   D) Using the new operator

90 How do you raise an event in C#?

A) By using the event keyword   B) By calling the event like a method

C) By using the new keyword   D) By assigning a delegate to the event

91 Which aggregate operator is used to calculate the average of numeric values in a sequence?

A) Total()   B) Max()   C) Count()   D) Average()

92 Which interface must a data structure implement for LINQ operations to be used?

A) IList   B) ICollection   C) IEnumerable   D) IQueryable

93 Which namespace provides LINQ functionality in .NET?

A) System.Data   B) System.Linq   C) System.IO   D) System.Net

94 What does the following LINQ query do?

        var result = from customer in customers

        orderby customer.LastName descending

        select customer.FirstName;

A) Orders customers by their first names in ascending order

B) Orders customers by their last names in descending order

C) Filters out customers with last names starting with 'A'

D) Groups customers by their first names

95 Which LINQ method is used to group data by the values in a field?

A) SortBy   B) FilterBy   C) OrderBy   D) GroupBy

96 Which of the following is a valid syntax for a lambda expression in C#?

A) x => return x * x;   B) x => x * x   C) (x) => return x * x;   D) x = {return x * x; }

97 Which of the following is a correct syntax for overloading the addition operator in C#?

A) public static int operator +(int a, int b) { }   B) public static operator +(int a, int b) { }

C) public int operator +(int a, int b) { }   D) public int +(int a, int b) { }

98 What is the purpose of implementing operator overloading in C#?

A) To change the behavior of built-in operators for specific types

B) To add new operators to the language

C) To improve performance of arithmetic operations

D) To restrict the usage of operators in certain contexts

99 What is the associativity of the MINUS operator (-) in C#?

A) Not associative   B) Right-associative   C) Left-associative   D) None of the above

100 Which keyword specifies that a conversion can be performed automatically without requiring a cast.

A) explicit   B) implicit   C) cast   D) conversion

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