

M4.1-R4: APPLICATION OF .NET TECHNOLOGY

NOTE:

1. There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
2. **PART ONE** is to be answered in the **TEAR-OFF ANSWER SHEET** only, attached to the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book.
3. Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the answer sheet for **PART ONE** is returned. However, candidates, who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the answer sheet for **PART ONE**.

TOTAL TIME: 3 HOURS

TOTAL MARKS: 100
(PART ONE – 40; PART TWO – 60)

PART ONE **(Answer all the questions)**

1. **Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1x10)**
 - 1.1 In C#, a statement “a ? b : c” means
 - A) If a is true, returns the value of b, otherwise c
 - B) If b is true, returns the value of a, otherwise c
 - C) If a is true, returns the value of c, otherwise b
 - D) If c is true, returns the value of b, otherwise a
 - 1.2 In C#, a statement “a ?? b” means
 - A) If a is null and b is null, returns a
 - B) If a is null, returns a, otherwise returns b
 - C) If a is null, returns b, otherwise returns a
 - D) None of the above
 - 1.3 In C# and VB.Net can you store multiple data types in System.Array?
 - A) No
 - B) Yes
 - C) Can't say
 - D) None of the above
 - 1.4 What is the role of the DataReader class in ADO.NET connections?
 - A) It does not return a dataset from the data source when the command is executed
 - B) It only can return a read-only dataset from the data source when the command is executed
 - C) It does both, store and return a read-only dataset from the data source when the command is executed
 - D) None of the above

- 1.5 What are the ways to deploy an assembly?
- A) A MSI installer
 - B) A CAB archive
 - C) A XCOPY command
 - D) All of the above
- 1.6 If a method is marked as “protected internal” who can access it?
- A) Classes that are both in the same assembly and derived from the declaring class.
 - B) Only methods that are in the same class as the method in question.
 - C) Internal methods can only be called using reflection.
 - D) Classes within the same assembly and classes derived from the declaring class.
- 1.7 What is boxing?
- A) Encapsulating an object in a value type.
 - B) Encapsulating a copy of an object in a value type.
 - C) Encapsulating a copy of a value type in an object.
 - D) Encapsulating a value type in an object.
- 1.8 What is a delegate?
- A) A delegate is an object that represents a method and a strongly typed function pointer.
 - B) A light weight thread or process that can call a single method.
 - C) A reference to an object in a different process.
 - D) An inter-process message channel.
- 1.9 Which design pattern is shown below?
- ```

public class X
{
 private X instance;
 private X() {
 }
 Public static X Instance {
 get
 {
 if (X == null)
 X = new X();
 return instance;
 }
 }
}

```
- A) Factory
  - B) Abstract Factory
  - C) Singleton
  - D) Builder
- 1.10 Which of the following operations you can NOT perform on an ADO.NET Data set?
- A) A Data Set can be synchronized with the database.
  - B) A Data Set can be synchronized with a Record Set.
  - C) A Data Set can be converted to XML.
  - D) You can infer the schema from a Data Set.

**2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the “tear-off” sheet attached to the question paper, following instructions therein. (1x10)**

- 2.1 A compiler switch “/text” creates an xml file from the xml comments in the files in an assembly.
- 2.2 In C#, following three assignment statements are equivalent.  
 month = month +1;  
 month + = 1;  
 month ++;
- 2.3 In ASP.Net fragment caching refers to the caching of individual user controls within a web Form.
- 2.4 A stack is a LIFO (Last In - First Out) collection. Only the last item is accessible at any time, and items can only be put at the top.
- 2.5 A list is a static array which does not resize itself as needed if more data is inserted than it can hold at the time of insertion.
- 2.6 Debugging tools CorDBG – command-line debugger, and DbgCLR – graphic debugger, come with the .NET SDK. To use CorDBG, one must compile the original C# file using the “/debug” switch.
- 2.7 All .NET languages have the same primitive data types. For example an int in C# is the same as an int in VB.NET.
- 2.8 In VB.NET programming language, the default size of Integer data type is 16 bits.
- 2.9 As XML is case-sensitive, so <Student> and <student> are different elements.
- 2.10 The operator “+ =” can be used to write an event to the delegate.

**3. Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1x10)**

| X    |                                               | Y  |                     |
|------|-----------------------------------------------|----|---------------------|
| 3.1  | ADO.NET is the primary data access API        | A. | “ // ”              |
| 3.2  | Operator “= =”                                | B. | “al.exe”            |
| 3.3  | Single Line Comments                          | C. | Relational Operator |
| 3.4  | Assembly Generation Utility                   | D. | .NET framework      |
| 3.5  | XML Schema definition tool                    | E. | “xsd.exe”           |
| 3.6  | Assembly                                      | F. | Logical Operator    |
| 3.7  | Operator “&&”                                 | G. | “System.data.dll”   |
| 3.8  | System Namespace                              | H. | System.Data.Common  |
| 3.9  | Class for communication with the data source  | I. | ODBC                |
| 3.10 | The number of elements the ArrayList can hold | J. | ObjectSpace         |
|      |                                               | K. | System.Data.OleDb   |
|      |                                               | L. | object              |
|      |                                               | M. | Size                |
|      |                                               | N. | Capacity            |
|      |                                               | O. | “csc.exe”           |

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Enter your choice in the “tear-off” answer sheet attached to the question paper, following instructions therein. (1x10)

|           |              |           |                  |           |                 |
|-----------|--------------|-----------|------------------|-----------|-----------------|
| <b>A.</b> | http         | <b>B.</b> | break & continue | <b>C.</b> | interfaces      |
| <b>D.</b> | object class | <b>E.</b> | NameSpaces       | <b>F.</b> | FIFO            |
| <b>G.</b> | .Net Runtime | <b>H.</b> | .Net application | <b>I.</b> | memory          |
| <b>J.</b> | removes      | <b>K.</b> | object           | <b>L.</b> | end             |
| <b>M.</b> | all          | <b>N.</b> | continue         | <b>O.</b> | XML             |
| <b>P.</b> | binary       | <b>Q.</b> | ADO.NET          | <b>R.</b> | OleDbConnection |
| <b>S.</b> | hardware     | <b>T.</b> | first time       |           |                 |

- 4.1 A queue is a \_\_\_\_\_ collection and only the first item is accessible at any time, and any item can only be put to the end of the queue.
- 4.2 Record set cannot be transmitted on \_\_\_\_\_.
- 4.3 MSIL (Microsoft Intermediate Language) Code is \_\_\_\_\_ independent.
- 4.4 Sole purpose of using \_\_\_\_\_ is to prevent name conflicts and resolves any ambiguity for the C# compiler.
- 4.5 Use \_\_\_\_\_ in C# loops to change the normal execution path.
- 4.6 Structures (struct) in C# can only inherit (or implement) \_\_\_\_\_.
- 4.7 In C# (and the .Net Framework) all the types (classes, structures, and interfaces) are implicitly inherited from the \_\_\_\_\_ defined in the System NameSpace.
- 4.8 Garbage Collection in .Net is invoked by the \_\_\_\_\_ at regular intervals using System.GC.Collect ( ) method and removes the dirty objects from the memory.
- 4.9 ASP.NET is a part of the framework for developing \_\_\_\_\_.
- 4.10 ADO.NET and .NET data providers make connection pooling mostly transparent to developers and \_\_\_\_\_ establishes a link with a data source via an OLE DB provider.

**PART TWO**  
(Answer any **FOUR** Questions)

5.

- a) What is ADO.NET?
- b) Explain, how “while” and “Do...While” loop operates?”
- c) Analyze the following code and give answer:

```
using system;
public static void Main ()
{
 // declaring and initializing an array of type integer
 int [] integers = {8, 6, 2, 15, 43, 7};
 // iterating through the array and printing each element
 For (int i = 0; i<5; i++)
 {
 integers [i] = 2 * integer [i+1] + 5;
 Console.WriteLine (integers []);
 }
}
```

- i) Is Console.WriteLine( ) a method or a class ? If WriteLine( ) is a method, then specify its type and the class to which it belongs. If WriteLine( ) is a class, then explain, why it is a class?
- ii) Operator “[ ]” is known as which operator in C#?
- iii) Give the output of the above code.

(3+6+6)

6.

- a) Give the output of the following code with justification.

```
using system;
public class DoWorkTest
{
 public static void Main ()
 {
 // declaring and initializing of type integer
 int p = 3;
 DoWork (p) ;
 console.WriteLine (" The value of p is " + p);
 // printing the value of p
 }
 public static void DoWork (int i)
 {
 i++;
 }
}
```

- b) What is ID selector in ASP.Net?
- c)
  - i) How to declare and initialize a variable in one statement using C# syntax?
  - ii) How do you use CSS file in ASP.Net?

- d) The following code snippet adds a new record to the in-memory database. Assume 'da' to be the SqlDataAdapter reference, 'ds' to be the Dataset reference and 'dt' to be the Data Table reference. Add the missing statement to the code.

```
DataRow r;
r=dt.NewRow();
r(0)=accno;
r(1)=accname;
r(2)=balance;
// Add missing statement here
da.Update(ds, "acc");
```

(3+5+4+3)

7.

- a) How to use ADO.NET with datasets? Explain with examples  
b) i) Explain the purpose of "break" statement in the following code.

```
using system;
public class BreakTest
{
 For (int i=1; i<=10; i++)
 {
 if (i < 5)
 {
 break;
 }
 Console.WriteLine ("in the loop, value of i is {0}.", i);
 }
}
```

- ii) Give the output of the following code.

```
using system;
public class ContinueTest
{
 For (int i=1; i<=10; i++)
 {
 if (i == 5)
 {
 continue;
 }
 Console.WriteLine ("in the loop, value of i is {0}.", i);
 }
}
```

- c) Write a program using VB.Net programming syntax to test whether two given strings are equal.

(6+4+5)

8.

- a) i) What is the basic difference between Dataset.Clone and Dataset.Copy?  
ii) What is the difference between Clear ( ) method and Remove (object) of the ArrayList class?

- b) Write short notes (on any two) of the following:
- i) .NET Framework
  - ii) Exception hierarchy in the .Net Framework
  - iii) Using ADO.NET without using datasets

(5+[2x5])

**9.**

- a) Briefly explain the fundamentals of connection pooling?
- b) What is method overloading? Explain with proper example.
- c) Identify and explain the error in the following code.

```
using system;
public class ForTest
{
 For (int i=1; i<=10; i++)
 {
 Console.WriteLine ("in the loop, value of i is {0}.", i);
 }
 i+ +; // line1
}
```

(5+6+4)