



### Higher National Diploma in Information Technology

Second Year, First Semester Examination – 2018

### ANSWER

**Instructions:**

Answer any five (05) questions only.

All questions carry equal marks.

No. of questions : 06

No. of pages : 05

Time : Three (03) hours

#### Q1.)

- a) Explain the term “Rapid Application Development” and State any two key objective of RAD.

**Usable systems are built within a short period of time (as little as 2-3 months)**

[04 Marks]

- b) “Traditional software development methodologies have certain issues”.

State and briefly explain three (03) of such issues.

- **Cost and schedule overruns**
- **Product not fit for business**
- **High workload**
- **Projects get cancelled**
- **Friction among managers, developers and customers**

[06 Marks]

- c) Briefly explain two (02) types of classic mistakes.

- i. **People related**
  - ii. **Product related**
  - iii. **Technology related**
  - iv. **Process related**
- should be describe briefly.**

[04 Marks]

- d) Justify the following statements.

- i) “Rapid application development tools supports effective development”

**Rapid application development tools support to speed up the development.**

- **Cost effective.**
- **Earlier usage**
- **Higher user involvement**

[03 Marks]

ii) "Rapid application development is not suitable for all type of software".

**Not suitable to following type projects**

**Research project, large scale project, and innovative project.**

**In some project**

**Higher accuracy expects in some project.**

**Accuracy estimation required.**

**Etc..**

[03 Marks]

**Q2.)**

a) Give two operators for following types with examples.

i) Mathematical operators

+ - \* / \.....

ii) Relational operators

<,>,=,<=,>=.....

[2x2 Marks]

b) i) Give four (4) logical operators in their precedence order (highest to lowest).

– Not  
– And  
– Or  
– Xor

[4x1 Marks

ii)  $X=2*4+6-8/4+2*(7 \bmod 4)$

What is the value of X after execution of above statement?

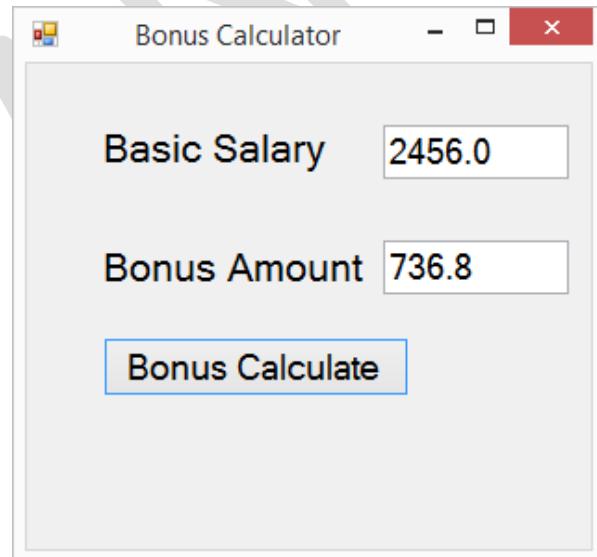
- c) Write Visual Basic code to accept an integer values using input box and to display the square value of using message box.

```
Sub Button1_Click()
    Dim x,y as integer
    x=inputbox("Please input number")
    y=x*x
End sub
```

[04 Marks]

- d) Answer the questions given below by considering the following rate of bonus in basic salary and user interface.

| Basic salary range | Percentage of Bonus |
|--------------------|---------------------|
| 10000 and below    | 30%                 |
| 10001-50000        | 20%                 |
| 50001-100000       | 15%                 |
| More than 100000   | 10%                 |



- i. Give the names for each of the above controls according the Visual Basic naming convention.

Naming convention should be used for every control.

Mainly textboxes(2) and buttons(1) should be named.

**Example**

**Button -btnBonCal / bonCalBtn**

**Textbox-txtBasicSalary/basicSalaryTxt etc**

[02 Marks]

- ii. Write visual basic codes to bonus calculate button click event shown in the interface.

**Sub bonCalBtn\_click()**

```
Dim BSalary As Double
Dim Bonus As Double
BSalary = Val(bSalaryTxt.Text)
If BSalary <= 10000 Then
    Bonus = BSalary * 0.3
ElseIf BSalary <= 50000 Then
    Bonus = BSalary * 0.2
ElseIf BSalary <= 100000 Then
    Bonus = BSalary * 0.15
Else
    Bonus = BSalary * 0.1
End If

BAmountTxt.Text = Bonus
End sub
```

[04 Marks]

**Q3.)**

- a) Write the differences of following control structures with examples.

i. If Then Else VS Select Case

**Select case more suitable to multi branching**

**Explain with suitable example**

**[04 Marks]**

- b) **Write Visual Basic code to find out a given number is weather prime or not between the range of 1-100.**

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
    Dim num, n As Integer
```

```

Dim prime As Boolean = True
n = 2
num = Val(txtNum.Text)
If num = 1 Then prime = False
If num = 2 Then prime = True

Do While n <= (num + 1) / 2 And prime
    (Do While n <= 100 And prime)
    If num Mod n = 0 Then
        prime = False
    End If
    n = n + 1
Loop

If prime Then
    MsgBox(" is prime number")
Else
    MsgBox(" is not prime number")
End If

End Sub

```

[06 Marks]

c) Write the output of following code segments.

i)

```

For I = 1 To 4
    For j = 1 To I
        TextBox1.Text = TextBox1.Text & I
    Next j
    TextBox1.Text = TextBox1.Text & vbCrLf
Next I

```

[04 Marks]

ii) Output of button1\_click .

```

Public Class Form1
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
    Dim x As Integer = 10
    Dim y As Integer = 15
    Dim z As Integer = 2

    Do While z < 5
        x += 1
        y += 1
        z += 2
    Loop

```

```

Loop
Select Case x
    Case Is <= 5 :If y Mod 2 <> 0 Then y = y + 5
        x += 5

    Case Is <= 10 :If y Mod 2 <> 0 Then y = y + 10
        x += 10

    Case Is <= 15 :If y Mod 2 <> 0 Then y = y + 15
        x += 15

    Case Else :If y Mod 2 <> 0 Then y = y + 20
        x += 5
End Select

MsgBox(x & " " & y & " " & z)
End Sub
End Class

```

[06 Marks]

#### Q4.)

- a) Describe the followings

- i. Procedure (sub)

**procedure** is a block of Visual Basic statements inside Sub, End Sub statements. Procedures do not return values.

- ii. Functions.

**Functions** are named block programs (procedures) that carry out a specific task and also return a result or value. They are marked by the Function and End Function statements.

[2x2 Marks]

- b) Write Visual basic code for a function fact( number), which returns the factorial value of number.(fact(5) returns 1x2x3x4x5=120)

**Function fact (by val n as integer)**

**Dim f as integer=1**

**For i=1 to n**

**f=f\*i**

**next i**

**return f**

**End Function**

[06 Marks]

- c) Explain the deference between following two keywords

i.) ByVal                                   ii.)ByRef

**ByVal - Pass only the value of original variable**

**ByRef - Pass a reference to original variable**

[2x2 Marks]

- d) Write the message box output of following code segments button1\_Click event .

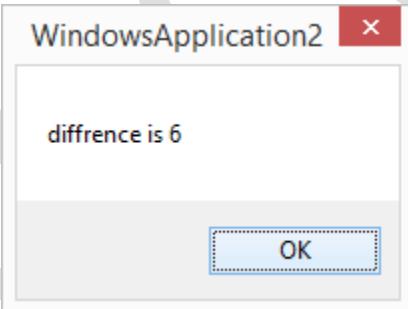
i)

```
Public Class Form1
Private Sub Button1_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles Button1.Click

    posDiff(3, 9)

End Sub

Sub posDiff(ByVal x As Integer, ByVal y As Integer)
    Dim z As Integer
    z = x - y
    If z < 0 Then z = z * -1
    MsgBox(" difference is " & z)
End Sub
End Class
```



Output text is enough

Difference is 6

[2 marks]

ii)

```
Public Class Form1
Private a As Integer = 14
Private b As Integer = 16
```

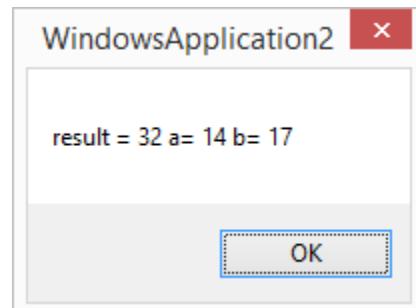
```
Private Sub Button1_Click(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles Button1.Click
```

```

    msgBox("result = "& Result(a,b) & "a= " & a & "b= " & b)
End Sub

function Result(ByVal x as integer, Byref y as integer) As
integer
X=x+1
Y=Y+1
Return x+y
End sub
End Class

```



**result=32 1 marks**  
**a=14 1 marks**  
**b=17 2 marks**

[4 marks]

**Q5.)**

- a) Briefly explain the terms ‘class’ and ‘object’.

**A class is a blueprint that describes an object and defines attributes and operations for the object.**

**An object is an instance of a class.**

[04 Marks]

- b) Write a VB code for following scenarios.

- i. Create Dog class with attributes of name-String. Which is not accessible outside the class.

**Class Dog**

**Private name as string**

**End class**

[ 2 marks]

- ii. Dog class has Methods

- setName(name)- to assign a name to dog.

- `showName()`-to display the name by message box.

```
Public sub setName(byval na as string)
Name=na;
End sub
```

```
Public sub showName()
Msgbox(name)
End sub
```

[ 4 marks]

c) Explain following terms with suitable a class example

i) Constructor of a class

Constructor is method. This method is executes during object initializing time.

```
Sub New()
Name="no name"
End sub
```

ii) Method/function overloading

- You can define method or property multiple times with different argument list

```
Public sub setName(byval na as string)
Name=na;
End sub
```

```
Public sub setName()
Name="I am";
```

**End sub**

[4 Marks]

d) What is the output of the following code segment?

[06 Marks]

Public Class Car

    Public Overridable Sub Accelerate()

        System.console.writeline ("Speed increase by 10 km/h")

    End Sub

    Public Sub BreakFunction()

        System.console.writeline ("Speed reduced to 0 km/h")

    End Sub

End Class

Public Class RaceCar

    Inherits Car

    Public Overrides Sub Accelerate()

        System.console.writeline("Speed increase by 20 km/h ")

    End Sub

End Class

Module Module1

    Sub main()

        Dim sc As RaceCar= New RaceCar()

        Dim c as Car=new Car()

        sc. Accelerate()

        c. Accelerate()

        sc. BreakFunction()

    End sub

End Module

#### **output**

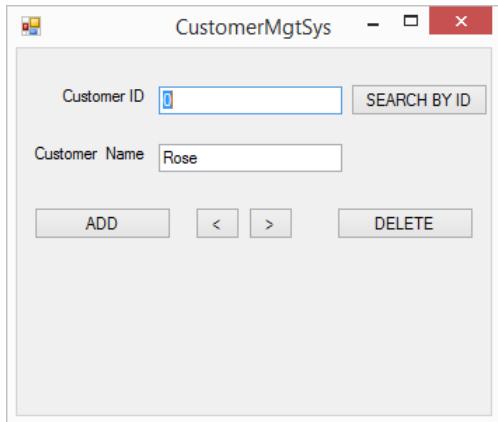
**Speed increase by 20 km/h**

**Speed increase by 10 km/h**

**Speed reduced to 0 km/h**

**Q6.)**

The following prototype interface was created using VB.Net to facilitate customer name keeping purpose. The back end for the system has been created using MS Access.



- a) “ADO.NET is Disconnected Data Access Architecture”

Explain the above statement?

**By keeping connections open for only a minimum period of time, ADO .NET conserves system resources and provides maximum security for databases and also has less impact on system performance**

[2 Marks]

- b) Following code segment for connecting above interface with the MS Access and load first record of table to fill data into textboxes. Fill in the blanks with suitable term.

```
Public Class CustomerFrm
    Private oleDbCon As OleDb.OleDbConnection
    Private oleDbDAdp As OleDb.OleDbDataAdapter
    Private ds As DataSet
    Private oleConnectionString As String
    Private rec As Integer = 0

    Private Sub CustomerFrm_Load(ByVal sender As System.Object, ByVal e As
        System.EventArgs) Handles MyBase.Load
        oleConnectionString = "Provider=Microsoft.Jet.OLEDB.4.0;
            DataSource=C:\Users\Acer\Documents\customerData.mdb"
        'To initialize of connection String
```

```

Dim sql As String = i"SELECT * FROM customer;"  

    'sqlstatement to get whole data of table customer  
  

oledbCon = New OleDb.OleDbConnection(ii. oleConnectionString)  

    'To initialize oledb connection  
  

oledbDAdb = New OleDb.OleDbDataAdapter(iii sql, oledbCon)  

    'To initialize oledb data adapter  
  

ds = New DataSet  

    'To initialize data set  

Try  
  

    oledbCon.iv_open  

        'To open a oledb connection  
  

    v_oledbDAdb____.Fill(ds, "cust")  

        'To fill the data into dataset  
  

    oledbCon.Close()  

        'To close a oledb connection  
  

Catch ex as exception  
  

    MsgBox("Problem in connection" & ex.message)  
  

End Try  
  

    idTxt.Text = ds.Tables("cust"). vi_rows(0).item(0)_____  

    nametxt.Text = ds.Tables("cust").vii_rows(0).item(1)_____  
  

End Sub  

End Class

```

[1x7 Marks]

viii. Briefly explain purpose of try catch using in above code.

**Provides a way to handle some or all possible errors that may occur in a given block of code, while still running code.**

[2 Marks]

- c) Write the code segment to save the information displayed on the form into the database.(Add Button)

Assume that the database contains a table with the following structure:

Customer (cId-integer, cName-text)

```

    Private Sub addbtn_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles addbtn.Click
        Dim insertSql As String = "INSERT INTO Customer VALUES(" & Val(idTxt.Text) & "," &
nametxt.Text & ")";
        Dim OLEDBCOM As New OleDb.OleDbCommand(insertSql, oledbCon)
        Try
            oledbCon.Open()
            OLEDBCOM.ExecuteNonQuery()
            oledbCon.Close()
        Catch EXC As Exception
            MsgBox(EXC.Message)
        End Try
    End Sub

```

| cId | cName  |
|-----|--------|
| 0   | Rose   |
| 1   | Mery   |
| 2   | Perera |
| 3   | Mohan  |
| 5   | Ramesh |

[05 Marks]

- d) Write the code segment to get the next record information of a customer. (> Button).

```

    Private Sub nextBtn_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles nextBtn.Click
        If rec < ds.Tables("cust").Rows().Count - 1 Then rec = rec + 1
        idTxt.Text = ds.Tables("cust").Rows(rec).Item(0).ToString
        nametxt.Text = ds.Tables("cust").Rows(rec).Item(1).ToString
    End Sub

```

[04 Marks]