EASTERN UNIVERSITY, SRI LANKA
DEPARTMENT OF MATHEMATICS
SECOND EXAMINATION IN SCIENCE - 2015/2016
FIRST SEMESTER (Nov. /Dec., 2017)
OC 207 – RAPID APPLICATION DEVELOPMENT

ANSWER ALL QUESTIONS   **TIME ALLOWED: 02 HOURS**

Q1) Software development is the process of developing software through successive phases in a systematic way.

a) Explain the basic pattern of general life cycle models in software development.   [16 Marks]

b) Distinguish between sequential and iterative software development approaches.   [16 Marks]

c) Briefly describe the term "Rapid Development".   [16 Marks]

d) List down three general characteristics of the Rapid Application Development approach.
    [12 Marks]

e) Describe three traditional software development issues that are successfully solved by the Rapid Application Development strategy.   [18 Marks]

f) Prototype model provides initial look and feel of the product and simulates few aspect of actual product.

  i. Write two example tools which help to build rapid prototypes based on existing information.
    [06 Marks]

  ii. Briefly explain how prototyping tools might be used in the development of software.
    [16 Marks]

Q2) Visual Basic has brought unmatched flexibility and ease of programming to the Windows platform.

a) The .Net framework is Microsoft's new platform for the development and implementation of application programs.

  i. Describe three general features of Vb.net.   [09 Marks]

  ii. Common Language Runtime **(CLR)** is one of the types of .Net framework. Briefly explain the important services provided by the **CLR**.   [12 Marks]

b) Compare and contrast each of the following programming concepts with the aid of example

   i. *Do_While* loop vs *Do_Until* loop   [12 Mar

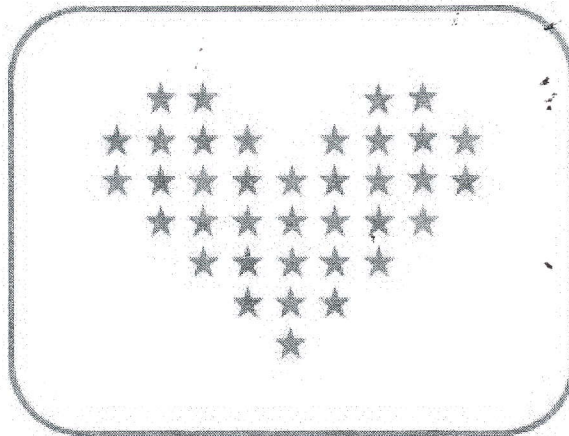   ii. Function vs Sub Procedure   [12 Mar

c) Write the output of the following Vb.net code segment?   [15 Mar

```
Private Sub Form1_Load(sender As Object, e As EventArgs) Handles MyBase.Load
    Dim count, sum As Integer
    sum = 1000
    For count = 100 To 10 Step -10
        sum -= count
        ListBox1.Items.Add(sum)
    Next

End Sub
```

d) Write a Vb.net code for printing the following pattern.   [20 Mar

e) Write a function in Vb.net as described below, which returns true if the array obtained I reversing the first n elements of the given array is the same as the given array.

Function Definition: bool isSymmetric(int A[], int n);

Example: Suppose A is {22, 33, 44, 55, 44, 33, 22} then the function call

isSymmetric(A, 7) would return **true**, but the call isSymmetric(A, 4) would return **false**.

                                               [20 Mark

Q3) Object-Oriented programming (OOP) is a major part of Visual Basic .NET.

  a) Briefly describe the terms 'class' and 'object' in the context of OOP.   [14 Marks]

  b) State three qualities of an object in OOP.   [06 Marks]

  c) Explain the concepts of constructor and destructor in Vb.net with the aid of suitable examples.   [20 Marks]

  d) Briefly describe each the following terms in OOP with the aid of suitable examples:

   i. Abstraction   ii. Encapsulation   iii. Access specifiers   iv. Inheritance   [40 Marks]

  e) Explain how overriding methods differ from overloading methods with the aid of a suitable example.   [20 Marks]

Q4) Microsoft ActiveX Data Object.Net (ADO.Net) is a model, a part of the .Net framework that is used by the .Net applications for retrieving, accessing and updating data.

  a) State three general features of ADO.Net.   [12 Marks]

  b) Draw and briefly explain the ADO.Net object model.   [20 Marks]

  c) Explain the importance of Data Adaptor in retrieving data from a database.   [10 Marks]

  d) The following interface was created using VB.Net to facilitate student registration activities of the Eastern University. The back end for the system has been created using Microsoft SQL Server.

i. Write a code segment for connecting the above interface with the following SQL Databa (Indicate any relevant libraries/packages/etc., required to create the connection). [08 Mar

Data Source = EUSL (database name);

Initial Catalog = StudentReg (table name);

Integrated Security = True.

ii. Write a code segment to view the student record according to the given student registrat number. (LOAD button) [10 Mar

iii. Write a code segment to save the information displayed in the form into the database. (SAVE button) [10 Mar

Assume that the table StudentReg has the following structure:

StudentReg (StNo, StName, Age, Course)

iv. Write a code segment to display the details of the previous student who has already registe.. (PREVIOUS button) [10 Mar..

v. Write a code segment to display the details of the next student who has already registered. ... (NEXT button) [10 Ma

vi. Write a code segment to clear all the textboxes in the interface. (CLEAR button). [10 Mar