

**ICT2611**

October/November 2016

**GRAPHICAL USER INTERFACE PROGRAMMING**

Duration 2 Hours

70 Marks

**EXAMINERS :**

FIRST

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SECOND

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Closed book examination.

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue.

**Instructions:**

- Answer all questions in the answer book
- Answers all multiple choice questions in answer book
- Marks are given in the brackets next to the question.
- Enjoy!

Please Turn Over

**Question 1 [10 marks]**

1 1 What will be the content of the variable x after the following statement is executed

$$x = (32 + 16) / (3 * 2) + 2$$

- A 4
- B 8
- C 16
- D 10

1 2 The loop programming construct is used for the following purposes.

- A It is a decision construct.
- B It is a construct for repetition
- C It is a construct for repetition and decision
- D It is used for exception handling.

1.3 The following is true about the programming Case statement and the If statement.

- A They are decision constructs.
- B They are constructs for repetition.
- C They are constructs for repetition and decision
- D They are used for exception handling.

1.4 Which procedure returns a value.

- A Procedure
- B Function
- C Subprocedure
- D ByRef

1.5 The [ ] provides all of the tools required to design a user interface.

- A. Solution explorer
- B Form designer
- C Toolbox window
- D Attributes window

1 6 The [ ] control is used to process code at regular intervals.

- A. Watch
- B Counter
- C. Clock
- D. Timer

1.7 The following event occurs when a form is loaded into memory.

- A. Click
- B. Load
- C. Keypress
- D. Right click

1.8 Inheritance makes the following possible

- A. Reuse existing code
- B. Exception handling
- C. Hide internal details of a class
- D. All of the above

1.9 Encapsulation makes the following possible.

- A. Reuse existing code
- B. Exception handling
- C. Hide internal details of a class
- D. All of the above

1.10 Passing a parameter to a program ByVal means the following

- A. A copy of the variable is made for the procedure.
- B. A reference to the variable is made for the procedure.
- C. Only numeric parameters are allowed.
- D. None of the above.

**Question 2 [30 marks]**

We want to write a program to calculate the water bill when the user clicks on a button called bill. Two readings in kiloliters are entered into textboxes called oldread and newread. A label called yourbill must be used to show the total bill for the month. The price of water per kiloliter varies Consumption of up to and including 4 kiloliters costs R5 per kiloliter Consumption over 4 kiloliters to and including 9 kiloliters costs R3 per kiloliter. Consumption over 9 kiloliters costs R2 per kiloliter. A person who used 6 kiloliters will pay R5 per kiloliter for the first 4 kiloliters and an additional R3 per kiloliter for the other 2 kiloliters consumed.

- 2.1 Write a flow chart for the algorithm for calculating the water bill [8 marks]
- 2.2 Make a sketch of the interface for this GUI program. [5]
- 2.3 Write the TOE table for this program [5]
- 2.4 Write the event handler for the bill button click event. [12 marks]

**Question 3 [10]**

Write a Visual Basic.net function to calculate the sum of all the numbers in an input string For example, if the input string is: "ICT2611", then the numbers included in this string are: 2, 6, 1, 1 and their sum is therefore,  $2+6+1+1 = 10$

**Question 4 [10]**

Assume two global arrays of type string have been declared as follows

```
Dim English(100) As String  
Dim Latin(100) As String
```

The first array has been initialized to 100 English words and the second has been initialized to the corresponding Latin equivalents.

- 4.1 Provide the Visual Basic sub procedure that will accept as input an English word and return its Latin equivalent. If the word is not found in the array then return an empty string. You are required to use a while loop in your program [8]
- 4.2 If the program in 1. compiled and executed correctly but it did not find the correct Spanish equivalent, what type of programming error is this? [2]

**Question 5 [10]**

- 5.1 List five possible situations needing error handling in a program. Briefly explain each problem [5]
- 5.2 Briefly explain the difference between a module and class. [5]