NCC EDUCATION

INTERNATIONAL DIPLOMA IN COMPUTER STUDIES

PROGRAMMING METHODS

SEPTEMBER 2008 – Local Exam

SECTION A
Answer all questions from this section.

SECTION B
Answer any 2 questions from this section.

Time: 2 hours

Clearly cross out surplus answers.

Failure to do this in Section B will result in only the first two answers being marked.

Any reference material brought into the examination room must be handed to the invigilator before the start of the examination.

Marks

QUESTION 1

Give TWO (2) examples of the syntax used in a *Loop* control structure. **4**

QUESTION 2

Evaluate the following expressions where $b=2$, $c=3$, $d=4$. **4**
  i) $z:= b * 3 + c * (d+3)$
  ii) $z:= c + b * (d-1)$

QUESTION 3

Explain the difference between *a field* and *a record.* **4**

QUESTION 4

What is the difference between a *data manipulation language* and a *data description language*? **4**

QUESTION 5

List FOUR (4) duties of the Database Administrator. **4**

QUESTION 6

Define the differences between user documentation and system documentation. **4**

QUESTION 7

What is an attribute? Give an example. **4**

QUESTION 8

Define the difference between public and private methods. **4**

QUESTION 9

Name and briefly explain any TWO (2) types of UML diagram. **4**

QUESTION 10

Explain the meaning of *an association* as used in Object Oriented Programming. Give an example of an association. **4**

Total 40 Marks

QUESTIONS CONTINUE ON NEXT PAGE

Marks

QUESTION 1

A) State FIVE (5) reasons why software must be tested. **10**

B) Explain the differences between:
    i) An *abstract class* and a *concrete class* **4**

    ii) Fourth generation languages and fifth generation languages **4**

C) Give TWO (2) examples of an open source programming language. **2**

D) Write the pseudo-code to solve the following problem: **10**

Input two exam marks and calculate the average of the two marks. Output "Fail" if average is less than 50, otherwise output "Pass". Provide text prompts for the input marks. Remember to identify variable names and type.

Total 30 Marks

Marks

QUESTION 2

A) State FOUR (4) advantages and FOUR (4) disadvantages of using UML. **8**

B) Name and draw the UML notation for THREE (3) use case elements. **6**

C) Draw a class diagram (without attributes and operations) to show the relationships involved in the following specification: **10**

A university allows students to study either part time and full time. Each student can take up to five modules in a semester where at most 25 students can be enrolled on each module.

D) Briefly explain THREE (3) functions of a Database Management System. **6**

Total 30 Marks

QUESTIONS CONTINUE ON NEXT PAGE

QUESTION 3

A) Give THREE (3) limitations of File Management Systems. **6**

B) List FOUR (4) key questions to ask when evaluating languages for use in a project. **8**

C) **i)** Explain the difference between a stack and a queue. **4**

   ii) Draw a diagram to illustrate a stack of five items in an array after each of the activities below. **6**

   i) The numbers 100, 210, 30 and 43 are pushed onto the empty stack in that order.
   ii) The numbers 43 and 30 are popped from the stack.
   iii) The numbers 30, 40 and 34 are pushed onto the stack in that order.

D) State TWO (2) advantages of object-oriented languages. **4**

E) State TWO (2) examples of object-oriented programming languages. **2**

Total 30 Marks

END OF PAPER