



PAN AFRICA CHRISTIAN UNIVERSITY

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING AND INFORMATION TECHNOLOGY

COURSE CODE: DICT0113

COURSE TITLE: PRINCIPLES OF PROGRAMMING AND ALGORITHMS

EXAM DATE: TUESDAY 28TH JULY 2015

TIME: 0900 – 1200 HRS

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Four questions in Section **B**.
- Write your **student number** on the answer booklet provided.



SECTION A

QUESTION ONE

- a) Differentiate between hardware and software, and give **TWO** examples in each case [8 marks]
- b) Explain each of the following terms as it applies to computer programming
 - i) Machine language [2 marks]
 - ii) Assembly language [3 marks]
 - iii) High Level programming languages [3 marks]
 - iv) Source code [2 marks]
 - v) Object code [2 marks]

SECTION B

QUESTION TWO

- a) Define the term algorithm in computer programming [2 marks]
- b) Describe **TWO** methods that are used for writing an algorithm [6 marks]
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- c) Using the **ONE** of the methods you named in QUESTION 2 (b), develop an algorithm for adding **ANY TWO INTEGERS** [6 marks]
- d) Define the integrated development environment (IDE) for programming, and outline **THREE** main functions that it provides. [6 marks]



QUESTION THREE

- a) Outline **FOUR** basic data types in C programming language [4 marks]
- b) Define an array [2 marks]
- c) Write a line of code in C++ programming to declare a one dimensional array to store six integers [5 marks]
- d) Explain the following terms as used in C++ Programming
 - i) Local variable [1 marks]
 - ii) Global variable [2 marks]
 - iii) Variable declared with the “const” keyword [2 marks]
 - iv) Abstraction [2 marks]
 - v) Computer program [1 marks]
 - vi) Syntax [1 marks]

QUESTION FOUR

- a) Explain **TWO** types of programming errors [4 marks]
- b) Describe **SIX** sections of a C program [12 marks]
- c) To demonstrate the use of a **While loop**, write a C program to display integers 1 to 10 [4 marks]

QUESTION FIVE

- a) Explain the use of the following operators
 - i) < [2 marks]
 - ii) <= [2 marks]
 - iii) == (double equals) [2 marks]
- b) Variables **x**, **y** and **z** are declared as:
int x=9, y=2, z;

Give the value of the variable called **z** in the following C code statements.

- i) z=x + y; [2 marks]



- ii) $z = x/y;$ [2 marks]
- iii) $z = x\%y;$ [2 marks]

- a) Explain the seven steps used in Problem Solving in programming [8 marks]

QUESTION SIX

- a) Explain the following parts of a c function:
 - i) Function Name [2 marks]
 - ii) The function body [6 marks]
- b) Define the term Characters as used in C++ Programming [2 marks]
- c) Write a simple C++ program that accepts two numbers then compares them to determine the maximum among them. [10 marks]

QUESTION SEVEN

- a) Explain the following terms
 - Programming Problem:- [3 marks]
 - Programming language: [3 marks]
 - Semantics: [3 marks]
- b)
 - i) What is the role of translators in programming? [2 marks]
 - ii) Differentiate between a compiler and an interpreter [4 marks]
- c) Outline **five** features of an IDE (Integrated Development Environment) [5 marks]