



PAN AFRICA CHRISTIAN UNIVERSITY

(DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY)

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: DICT0113

CAMPUS: ROYSAMBU

COURSE TITLE: PRINCIPLES OF PROGRAMMING AND ALGORITHMS

EXAM DATE: MONDAY, 5TH AUGUST 2019

TIME: START HOUR – END 14:00-16:00 HRS

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Three questions in Section **B**.
- Write only your **student number** on the answer booklet provided.
- None programmable calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A

(Answer ALL questions in this section)

Question 1

a) Define the following programming terms:

i. Variable **(2 Marks)**

ii. Data type **(2 Marks)**

iii. Algorithm **(2 Marks)**

b) Describe **THREE** methods of algorithmic representation **(6 Marks)**

c) Discuss the following programming paradigms.

i. Structured Programming: **(3 Marks)**

ii. Object oriented programming **(3 Marks)**

d) Describe the structure of a C- program **(6 Marks)**

e) Write a program to prompts for two integers values. The program then calculates and display the sum, product, difference and division of the prompted values

(6 Marks)

SECTION B

(Answer any FOUR (4) questions in this section)

Question 2

a) Highlight any **FOUR** variable naming conventions and rules used in C programming. **(4 marks)**

b) Write a C program that outputs the even numbers between 2 and 20 using for... loop. **(6 Marks)**

Question 3

- a) Outline any **FOUR** categories of C program operators **(4 Marks)**
- b) Write a C program that uses a function called `calc_vol` to compute the volume of a cube ($\text{vol} = \text{height} * \text{breadth} * \text{length}$). The main function should capture the dimensions from a user and finally display the volume returned by `calc_vol` function. **(6 Marks)**

Question 4

- a) Define the term **array** as used in programming **(2 Marks)**
- b) Differentiate a single-dimension from a two-dimensional array **(4 Marks)**
- c) Distinguish between the TWO ways of declaring constants in C language (use relevant example). **(4 Marks)**

Question 5

- a) Define a struct called 'Employee' that has the following members
 - Employee names (*string*)
 - Basic salary (*floating point*)
 - Gender (*string*)
 - Year of birth (*integer*) **(4 Marks)**
- b) Write a C language code snippet that declares a pointer variable of type integer, initializes it with an address of another variable and displays result on screen **(6 Marks)**

Question 6

- a) Outline any **FOUR** C supported data types **(4 Marks)**
- b) Discuss any **THREE** programming errors that a c programmer may encounter in the course of developing programs. **(6 Marks)**

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