



PAN AFRICA CHRISTIAN UNIVERSITY

(DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY)

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: DICT 0113

CAMPUS: ROYSAMBU

COURSE TITLE: INTRODUCTION TO PROGRAMMING CONCEPTS

EXAM DATE: MONDAY, (4TH APRIL 2022)

TIME: START HOUR – END 08:00-11 :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**.
- None programmable calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A

(Answer ALL questions in this section)

SECTION A (10 Marks)

Question 1:

- a) The table below was used by a certain college to award grades to students in an examination. Use it to answer the question that follows

Range of Marks	Grade
From 70 to 100	A
From 60 to 69	B
From 50 to 59	C
From 40 to 49	D
Less than 39	F

Write a C program that would prompt the user to enter the marks obtained by a student. The program should then output the grade. Use if statement (6 Marks)

- b) Discuss the below concepts as used in programming (2 Marks)
- i. Modular programming
- ii. Monolithic programming (2 Marks)

SECTION B

(Answer any THREE (3) questions in this section)

Question 2:

- a) Write a C program that would be used to output the pattern below (6 Marks)

```
$$$$$$  
$$$$$$  
$$$$$$  
$$$$$$
```

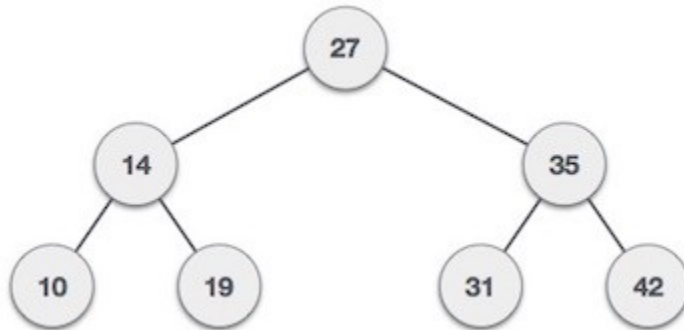
b) Explain Time complexity and space complexity as used in data structures

(4

Marks)

Question 3:

a) The figure below shows a binary tree structure, use it to answer the questions that follows



- i. Identify all the leaf nodes in the tree (2 Marks)
- ii. Show how you would traverse the tree using post-order traversal(2 Marks)

b) Discuss three advantages of machine language over high level languages

(6

Marks)

Question 4:

a) Differentiate between a compiler and an interpreter as used in programming

(4

Marks)

b) Write a C program that prompts the user to enter the age of a person. The program then displays the age and a message "you are an adult" whenever the age is greater than 18 years. (6 Marks)

Question 5:

- a) The table shows the criteria used by a certain college to admit applicants to various course levels. Use it to answer the question that follows.

KCSE GRADE	COURSE LEVEL
A OR B	Degree course
C	Diploma Course
D	Certificate course
Any other	Artisan Course

Write a C program that prompts a user to enter the grade obtained. The program should then output the course level the applicant is qualified to join. Use switch case control structure (6 Marks)

- b) Explain two types of errors that are likely to occur after a program compilation (4 Marks)

Question 6:

- a) Write an algorithm to calculate average of four numbers (5 Marks)
- b) Draw a flowchart for the program in 6a above (5 Marks)

THE END