



PAN AFRICA CHRISTIAN UNIVERSITY

(DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY)

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: DICT0113

CAMPUS: ROYSAMBU

COURSE TITLE: PRINCIPLES OF PROGRAMMING AND ALGORITHMS

EXAM DATE: XXXX, (XX JULY 2022)

TIME: START HOUR – END XX: XX-XX: XX 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
Above 100	Invalid marks
From 70 to 100	A
From 60 to 69	B
From 50 to 59	C
From 40 to 49	D
Less than 39	F
Less than 0	Invalid marks

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)

- i. Write an algorithm to calculate the sum and average of four numbers

(2

Marks)

- ii. Draw a flow chart to represent the logic in b(i) above (2 Marks)

SECTION B

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

Question 2:

- a) Discuss **two** characteristics on low level programming languages versus high level programming languages (4 Marks)
- b) Write a C program that would be used to output the pattern below (6 Marks)

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

Question 3:

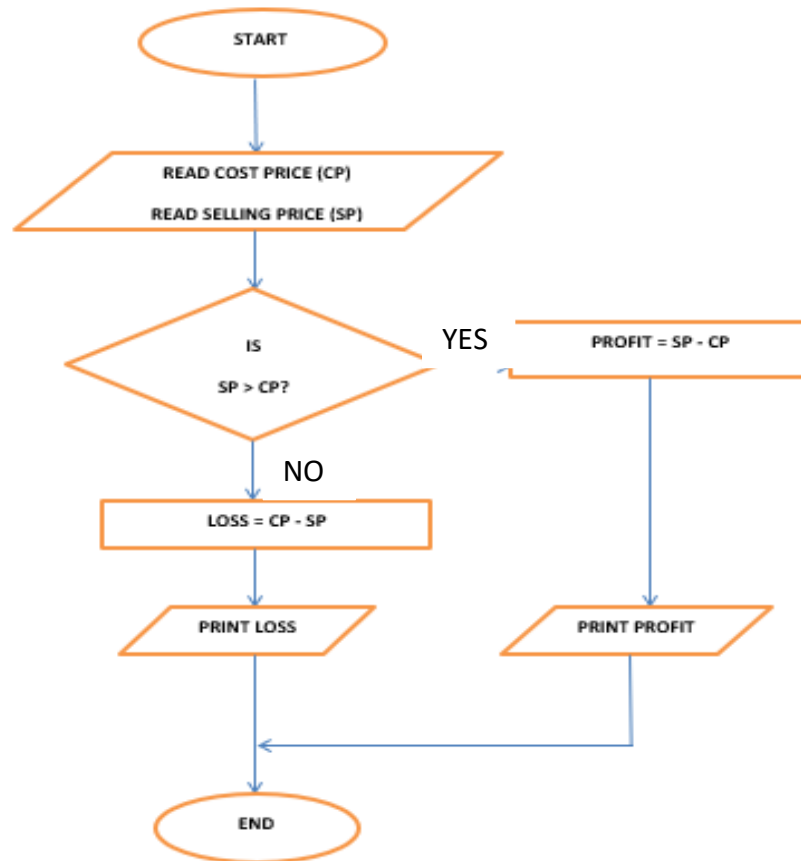
- a) Differentiate between a compiler and an interpreter as used in programming (4 Marks)
- b) Write a C program that prompts the user to enter the age of a person. The program then displays the age and a message "you are an adult" whenever the age is greater than 18 years. (6 Marks)

Question 4:

- a) The diagram below shows a flowchart. Discuss the various stages of the flowchart and determine the output give the values below (5mks)

CP = 325

SP = 458



b) Write a C program that would display even numbers between 2 and 10. Use a while loop

(5

Marks)

Question 5:

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

KCSE GRADE	COURSE LEVEL
A	Masters course
B	Degree course
C	Diploma Course
D	Certificate 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) Evaluate the following expression. Show the order of precedence (5 Marks)

$$3 * 6 + 15 \bmod 4 - (30/5)$$

- b) With the aid of a diagram in each case distinguish between a stack and a queue (5 Marks)

THE END