



UNIVERSITY EXAMINATIONS
CHUKA & EMBU

FIRST YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN
COMPUTER SCIENCE

COSC 0140: FUNDAMENTALS OF COMPUTER PROGRAMMING

STREAMS: DIP COMP SCI Y1S2

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 16/4/2025

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, No reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.
- Marks are awarded for clear and concise answers.

SECTION A (ANSWER ALL QUESTIONS IN THIS SECTION)

QUESTION ONE (30 MARKS)

- a. What are syntax errors and logical errors in programming? Provide an example of each.?
(4 marks)
- b. Draw a flowchart that explains the if...else selection construct. (3 marks)
- c. Define the following terms
- i. Source code (2 marks)
 - ii. Algorithm (2 marks)
 - iii. Pseudocode (2 marks)
 - iv. Computer programming (2 marks)
 - v. object code (2 marks)
- d. With the aid of an example illustrate how comments are written in python code (2 marks)
- e. Write a Python program that prompts the user to enter a mobile USSD code *544#. If the user enters *544#, the service menu should be displayed as follows:
Welcome to the Mobile Service Menu:
- 1. Buy Data
 - 2. Check Balance
 - 3. Offers
 - 4. Exit (4 marks)
- f. Explain the difference between Debugging and Testing. (2 marks)
- g. Discuss THREE disadvantages of using low level languages in programming (3 marks)

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- h. Differentiate between a compiler and an interpreter as used in computer programming. (2 marks)

SECTION B (ANSWER ONLY TWO QUESTIONS IN THIS SECTION)

QUESTION TWO (20 MARKS)

- a. A program is required to read three numbers from a user and provide a product of the numbers.
- i. Design an algorithm in form of a pseudocode to solve this problem (3 marks)
 - ii. Design an algorithm in form of a flowchart to solve this problem. (5 marks)
 - iii. Write a python program to solve this problem (4 marks)
- b. Describe FOUR desirable characteristics that a good algorithm should have (8 marks)

QUESTION THREE (20 MARKS)

- a) State THREE differences between machine language and assembly languages in computer programming (6 marks)
- b) Generally, there are stages involved in developing and implementing a software solution. Explain the main stages of a software development process. (10 marks)
- c) Differentiate between loaders and Linkers stating their roles in Programming (4 marks)

QUESTION FOUR (20 MARKS)

- a. With the Aid of a flow chart distinguish between the While structure and the For Loop structure. (6 marks)
- b. Define the following terms. (6 marks)
- i. Variables.
 - ii. Identifiers.
 - iii. Constants.
- c. A program is required that prints “PASS” if the score captured is above 40 and “FAIL” if otherwise
- i. Draw a flowchart for the algorithm. (4 Marks)
 - ii. Write a python program that solves the problem. (4 Marks)

QUESTION FIVE (20 MARKS)

- a. Draw and describe five symbols used in flow charts (10 marks)
- b. Table shows a grading system used by a primary school to analyze student’s internal examination results. Use it to answer the question that follows. (10 marks)

Average Grade

75-100 A

65-74 B

55-64 C

45-54 D

Less than 45 F

Write a Python program that accepts five values from the keyboard. The program then determines and output the average and its appropriate grade.