



CERTIFICATE IN ADVANCED COMPUTER STUDIES

LEVEL 5 EXAMINATIONS

FINAL INTEGRATED SUMMATIVE EXAMINATION

SITTING: NOVEMBER/DECEMBER 2023

SUBJECT: OPERATING SYSTEM

TIME: THREE (3) HOURS

TOTAL MARKS: 100

PASS MARK: 50

INSTRUCTIONS

1. Write your examination number and National Registration Card number on the answer Booklet provided. Ensure to append your signature in the space provided on the answer booklet.
2. Write your answer **SCRIPT SERIAL NUMBER** on the examination register provided and the entry slip.
3. There are **SEVEN (7)** questions in this paper.
4. You are required to attempt any **FIVE (5)** questions.
5. All questions carry equal Marks.
6. Cell phones and programmable calculators are not allowed in the examination room.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

QUESTION 1

The memory management unit employs placement policies to make use of the freed blocks. (2 Marks)

- a) Define memory management. (2 Marks)
- b) Using an example, explain the following placement policies: (4 Marks)
 - i) Best fit (4 Marks)
 - ii) Worst fit (4 Marks)
 - iii) First fit (2 Marks)
- c) Define the concept of virtual memory. (4 Marks)
- d) Distinguish between multiprocessing and multiprogramming. (2 Marks)

Total (20 Marks)

QUESTION 2

- a) List **two (2)** examples of operating systems. (2 Marks)
- b) Explain the concept of real time operating system. (4 Marks)
- c) Explain the scheduling that controls the degree of multiprogramming in the system. (4 Marks)
- d) Differentiate blocked suspended state from ready suspended state of a process. (4 Marks)
- e) State **three (3)** activities or events that cause a process to move from a running state to a waiting state (6 Marks)

Total (20 Marks)

QUESTION 3

- a) Define an interrupt. (2 Marks)
- b) Deadlock is one of the problems faced in a multiprogramming environment.
 - i) State **four (4)** deadlock conditions. (8 Marks)
 - ii) Explain **two (2)** ways of resolving a deadlock once detected. (4 Marks)
- c) Explain **two (2)** replacement algorithms (6 Marks)

Total (20 Marks)

QUESTION 4

- a) State **three (3)** types of permissions that can be set to control access to files. (6 Marks)
- b) Define the term authentication. (2 Marks)
- c) With reference to UNIX operating system, describe the following terms:
 - i) The shell (2 Marks)
 - ii) The kernel (2 Marks)
 - iii) Pipe (2 Marks)

- d) Describe **two (2)** scheduling algorithms.

(6 Marks)
Total (20 Marks)

QUESTION 5

- a) In relation to a loader, explain **two (2)** fetch strategies.
b) State **two (2)** reasons for Windows operating system's popularity.
c) Distinguish between a thread and a process.
d) Using **two (2)** examples, explain background processes.
e) Define inter-process communication.

(6 Marks)
(4 Marks)
(4 Marks)
(4 Marks)
(2 Marks)

Total (20 Marks)

QUESTION 6

- a) Describe operating system hardening.
b) Define the term quantum time.
c) Using an example, explain a single- user multi-tasking system and multi-user multi-tasking system
d) Distinguish between fixed memory and variable memory allocation.
e) Protection is a mechanism that controls the access of programs, processes, or users to the resources defined by a computer system.
Explain **three (3)** ways through which a user can be authenticated.

(2 Marks)
(2 Marks)
(6 Marks)
(4 Marks)
(6 Marks)

Total (20 Marks)

QUESTION 7

- a) List **three (3)** versions of Microsoft windows operating system.
b) State **one (1)** example of a transaction to explain a batch system.
c) Explain **two (2)** important reasons for running operating system updates.
d) Outline the process of installing an operating system on a personal computer such as Desktop and Laptop.
e) Describe **three (3)** levels of scheduling

(3 Marks)
(2 Marks)
(4 Marks)
(5 Marks)
(6 Marks)

Total (20 Marks)