



(Knowledge for Development)

KIBABII UNIVERSITY (KIBU)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

END OF SEMESTER EXAMINATION

2021 / 2022 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER EXAMINATION

**FOR THE DEGREE OF BACHELORS OF SCIENCE IN
(INFORMATION TECHNOLOGY)**

COURSE CODE: BIT 123

COURSE TITLE: PLATFORM TECHNOLOGIES I

DATE: 16/05/2022

TIME: 2.00 P.M. – 4.00 P.M.

2HRS

INSTRUCTIONS TO CANDIDATES:

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

Paper Consists of 3 Printed Pages. Please Turn Over ►

QUESTION ONE [COMPULSORY] (30 MARKS)

- a) Describe any four (4) functions of an Operating system **(4 Marks)**
- b) Explain the term “process spawning” as used in Process Management **(2 Marks)**
- c) Define the term CPU Scheduling; hence categorize the CPU scheduling algorithms. **(4 Marks)**
- d) Differentiate between pre-emptive and non-pre-emptive scheduling. **(2 Marks)**
- e) What is FCFS algorithm? Explain with example. **(4 Marks)**
- f) Describe paging and demand paging. **(4 Marks)**
- g) Describe external and internal fragmentation. How can this problem be solved using paging **(6 Marks)**
- h) Under what circumstances do page faults occur? Describe the actions taken by the operating system when a page fault occurs. **(4 Marks)**

QUESTION TWO (20 MARKS)

- a) Explain the following terms as used in Operating Systems **(8 Marks)**
 - i) Process
 - ii) Process Control Block
 - iii) Context switch
 - iv) Thread
- b) CPU burst time indicates the time, the process needs the CPU. The following are the set of processes with their respective CPU burst time (in milliseconds).

Process	CPU Burst Time
P1	10
P2	5
P3	5

Calculate the average waiting time if the process arrived in the following order:

i) P1, P2, & P3 (3 Marks)

ii) P2, P3 & P1 (3 Marks)

c) What are the two models of interprocess communication? What are the strengths and weaknesses of the two approaches? (6 Marks)

QUESTION THREE (20 MARKS)

a) Highlight any **Four (4)** attributes of a file (2 Marks)

b) What is the cause of thrashing? How does the system detect thrashing? Once it detects thrashing, what can the system do to eliminate this problem? (6 Marks)

c) Explain any Three (3) allocation schemes that exist for allocating secondary storage to files (6 Marks).

d) What is directory? What are the different ways to implement a directory? (6 Marks)

QUESTION FOUR (20 MARKS)

a) Differentiate between sequential and direct access method (4 Marks)

b) Briefly explain any two page replacement algorithm as used in memory management (6 Marks)

c) What is Deadlock? Differentiate between Deadlock and Starvation. Explain four deadlock prevention methods (10 Marks)

QUESTION FIVE [20 MARKS]

a) Using a diagram, explain the states a process goes through during execution (10 marks)

b) State and explain any three ways in which operating system authenticate users of a computer. (6 Marks)

c) List any four services provided by the operating system in regard to I/O operation. (4 Marks)