



10

(Knowledge for Development)

**KIBABII UNIVERSITY
(KIBU)**

**UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR ONE SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE IN
(INFORMATION TECHNOLOGY)**

**COURSE CODE : BIT 123
COURSE TITLE : PLATFORM TECHNOLOGIES**

DATE: 01/10/2021 TIME: 2.00 P.M.-4.00 P.M.

**INSTRUCTIONS TO CANDIDATES
ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

QUESTION ONE (COMPULSORY) [30 MARKS]

- a) With regard to process synchronization describe what is meant by race conditions? [5 MARKS]
- b) Draw a Process State Diagram with 5 states naming all the possible states and illustrate the legal transitions between these states. Describe all the reasons why a process may transition in or out of the ready state. [12 marks]
- c) Outline each element stored in the process control block (PCB). [7 marks]
- d) What extra steps occur during a process switch as opposed to a context switch? [6 marks]

QUESTION TWO [20 MARKS]

- a) Briefly explain the difference between, long-term, medium-term and short-term scheduling. [5 Marks]
- b) Explain the terms pre-emptive scheduling and non pre-emptive scheduling. [2 MARKS]
- c) What are the main goals of any modern Operating System? Outline the function of four key modules found in a well organised modern Operating System. [8 marks]
- d) What are the five major activities of an operating system in regard to process management? [5 marks]

QUESTION THREE [20 MARKS]

- a) define the following terms [3 Marks]
 - i. Swapping
 - ii. Fetching
 - iii. Mutual exclusion
- b) discuss the advantages of concurrent processing [3 Marks]
- c) State and explain any three CPU scheduling algorithms [9 Marks]
- d) What are the five major activities of an operating system in regard to process management? [5 Marks]

QUESTION FOUR [20 MARKS]

- a) What is device independence? [3 Marks]
- b) Several popular microcomputer operating systems provide little or no means of concurrent processing. Discuss the major complications that concurrent processing adds to an operating system. [6 Marks]
- c) Discuss three requirements must a solution to the critical-section problem satisfy? [6 Marks]
- d) List two ways we can break the fourth condition to prevent deadlock, using resource ordering. [5 Marks]

QUESTION FIVE [20 MARKS]

- a) Give two ways in which data in a file should be accessed in the following order. [2 MARKS]
- b) Define the essential properties of the following types of operating systems [5 MARKS]
- i. Batch
 - ii. Interactive
 - iii. Time sharing
 - iv. Real time
 - v. Distributed
- c) State any three types of files [3 MARKS]
- d) Explain three advantages of a graphical user interface [6 MARKS]
- e) Differentiate between polling and interrupt [4 MARKS]