



ZIMBABWE EZEKIEL GUTI UNIVERSITY

**FACULTY OF SCIENCE, TECHNOLOGY, AGRICULTURE AND FOOD
SYSTEMS DEVELOPMENT**

DEPARTMENT OF INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE : BIS125
COURSE TITLE : Operating Systems
SPECIAL REQUIREMENTS : None
DURATION : 3 Hours
LEVEL : 1.2
DATE : 2024 08 APR 2024

INSTRUCTIONS TO CANDIDATES:

1. This paper consists of 2 sections.
2. Answer **ALL** Questions in SECTION A and choose 3 in SECTION B.

SECTION A

Answer ALL questions from this section

Question 1

a. Define the following terms with reference to operating systems:

- i) Registers. [2]
- ii) Process State [2]
- iii) Main memory. [2]
- iv) Deadlock [2]
- v) Program counter [2]

Question 2

- a) Discuss the various functions of an operating system. [10]
- b) Describe the six possible transitions among the five process states [10]
- c) Explain the difference between polling and an interrupt. [10]

SECTION B

Question 3

- a. Differentiate between a process and a thread. [10]
- b. Define Process Control Block [2]
- c. Discuss each of the important information stored in the PCB? [8]

Question 4

a) Discuss any four goals of scheduling

[8]

b) Briefly explain swapping in memory management name 3 page replacement algorithms [6]

c) What is the difference between SJF and SRT scheduling algorithms

[6]

Question 5

a. What are the differences between Batch processing system and Real Time Processing System? [4]

b. Discuss any three strategies used by the operating system to recover from a deadlock [6]

c. Illustrate and explain how the operating system uses the Banker's algorithm to prevent deadlocks.

[10]

Question 6

a. Given the following processes and burst times

Process	Burst Time
P1	10
P2	6
P3	23
P4	9

Calculate the average waiting time when FCFS and SJF scheduling algorithms is used? Based on your results which is the best scheduling policy?

[15]

b. The operating system must allocate and de allocate various resources for each active process. Name and explain five resources in a computer system

[5]

Question 7

a. Differentiate the following memory management terms

- i Paging and segmentation.
- ii Contiguous and non-contiguous memory allocation
- iii Fixed memory partitioning and variable/dynamic memory/partitioning.

[12]

b. Discuss the difference between Windows and Linux Operating Systems

[8]