



# ZIMBABWE EZEKIEL GUTI UNIVERSITY

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## FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

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### DEPARTMENT OF INFORMATION SYSTEMS

#### EXAMINATION PAPER

**COURSE CODE** : MIS 110  
**COURSE TITLE** : OPERATING SYSTEMS  
**SPECIAL REQUIREMENTS** : None  
**DURATION** : 3 Hours  
**LEVEL** : 1.2  
**DATE** : June /July 2022

#### INSTRUCTIONS TO CANDIDATES:

1. No cell phones are allowed in the examination venue.
2. Answer all questions from Section A and any 3 questions from Section B.
3. Begin each question on a new page.

## 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. Illustrate and explain how the best fit and worst fit algorithms work [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 any three differences between paging and segmentation. [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
P5	31

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 External fragmentation and internal fragmentation
  - 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]