ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE	:	MIS110
COURSE TITLE	:	Operating Systems
SPECIAL REQUIREMENTS	:	None
DURATION	:	3 Hours
LEVEL	:	1.2
DATE	:	Feb 2022

18 FEB 2022

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 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]