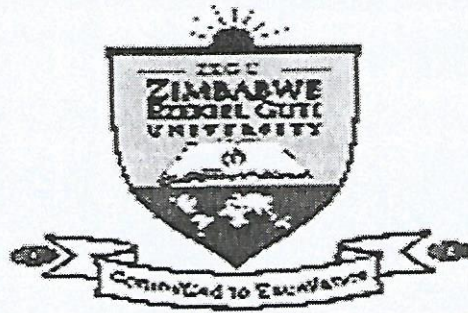


ZIMBABWE EZEKIEL GUTI UNIVERSITY



FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

Department of Digital Technology

Module: CDT104 Operating Systems

Exam Duration: 3 hours

16 July 2019

End of Semester Examination 2019

Instructions

- (i) The mark allocation for each question is shown in square brackets
- (ii) The total marks for the examination is 100.
- (iii) The examination consists of five questions answer any four questions of your choice
- (iv) Each question carries 25 marks

Question 1

- i) Explain the difference between a process and a thread. [10 marks]
- ii) Describe the seven-state process model with the aid of a diagram. [15 marks]

Question 2

- a) Explain the following terms:
 - i) Registers. [3 marks]
 - ii) Caches. [3 marks]
 - iii) Main memory. [3 marks]
 - iv) Disk storage. [3 marks]
- b) Explain the difference between polling and an interrupt. [13 marks]

Question 3

The table below shows the arrival time of processes.

Process ID	Arrival time	Service Time	Finish Time	Turnaround	Normalized turnaround
P1	0	3			
P2	2	6			
P3	4	4			
P4	6	5			
P5	8	2			

- a) Complete the above table using the following scheduling policies.
 - i) First-in-First-out (FIFO). [5 marks]
 - ii) Shortest Job First (SJF). [5 marks]
- b) Draw a Gantt chart for each scheduling policy.
 - i) First-in-First-out (FIFO). [5 marks]
 - ii) Shortest Job First (SJF). [5 marks]
- c) Based on your results from part (a) and (b) which is the best scheduling policy? [5 marks]

Question 4

- i) Explain the problems faced when sharing a resource such as a circular buffer using the producer and the consumer as examples. [10 marks]
- ii) Based on your answer from part (i) above come up with ways on how those problems mentioned may be avoided. [15 marks]

Question 5

- i) Explain any five (5) differences between paging and segmentation. [10 marks]
- ii) Explain any five (5) types of Operating Systems. [10 marks]
- iii) Explain two types of threads. [5 marks]

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