



PAN AFRICA CHRISTIAN UNIVERSITY

DIPLOMA INFORMATION COMMUNICATION TECHNOLOGY

END OF SEMESTER EXAMINATION APRIL 2019

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: DICT0132

CAMPUS: ROYSAMBU

COURSE TITLE: PRINCIPLES OF OPERATING SYSTEMS

EXAM DATE: MONDAY 15TH APRIL 2019

TIME: 1400HRS-1700HRS

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Four questions in Section **B**.
- Write only your **student number** on the answer booklet provided.
- None programmable calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

Section One (I) 40 Marks.

Question One - Compulsory:

- a) Describe **FOUR** functions of any operating System. **[8 Marks].**
- b) Illustrate the four components of a computer system. **[4 Marks].**
- c) List and briefly explain **four** conditions necessary for a deadlock to occur **[4 Marks]**
- d) Give **TWO** reasons for process termination. **[4 Marks].**
- e) Distinguish between multiprogramming and Uni-processing **[6 Marks].**
- f) Discuss the **FIFO & SJF** as scheduling algorithms policies. **[6 Marks]**
- g) Explain the differences between **Buffering** and **Caching** as I/O techniques **[2 Marks].**
- h) Based on the FCFS Scheduling below, calculate both the waiting time and ratio for each Job. **[6 Marks]**

JOB	Est Run Time	Waiting	Ratio
K	5		
X	60		
Y	1		

SECTION TWO: 15 MARKS EACH (ANSWER ANY TWO QUESTIONS)

Question 2 (15 Marks)

- a) Discuss THREE types of Scheduling algorithms and their aims **[6 Marks].**
- b) By Use of well-Illustrated diagram, explain the Five State Process Model. **[9 Marks].**

Question 3 (15 Marks)

- a) Describe the differences between the following algorithms,
 - i. SJF AND SRT
 - ii. FCFS AND ROUND ROBIN **[8 Marks].**
- b) Discuss FIVE threats affecting major Operating systems **[5 Marks].**
- c) Outline **TWO** benefits of NTFS file system over FAT file system **[2 Marks]**

Question 4 (15 Marks)

- a) Define the term 'Interrupt' as used in operating systems **[1 Marks].**
- b) Explain the following terms as used in operating systems: **[6 Marks]**
 - i. Thread
 - ii. Batch Processing.
 - iii. Process scheduling

- c) Process Control Block PCB involves several activities, Discuss any FOUR such activities besides Program identification. **[8 Marks].**

Question 5 (15 Marks)

- a) Discuss THREE benefits of Threads. **[6 Marks].**
b) Highlight a detailed step by step program execution. **[4 Marks].**
c) Discuss FIVE requirements for memory management **[5 Marks]**

Question 6 (15 Marks)

- a) By use of a block diagram, illustrate and discuss the abstract view of computer components. **[8 marks]**
b) Differentiate between Pre-emptive and Non-pre-emptive Scheduling **[6 Marks]**
c) What is meant by Kernel or supervisor mode within an OS. **[1 Mark]**

Question 7 (15 Marks)

- a)** Distinguish between a program and a process explaining why the use of the process concept is necessary in studying OS. **[6 Marks]**
b) Compare the nature and background of UNIX and MS-Dos. **[4 Marks]**
c) Explain the nature of real time system **[5 Marks]**

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