



PAN AFRICA CHRISTIAN UNIVERSITY

(BBIT, DICT)

END OF SEMESTER EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: BIT 108, DICT0112

CAMPUS: ROYSAMBU

COURSE TITLE: OPERATING SYSTEMS

EXAM DATE: DAY OF WEEK, DATE (DDTH MONTH YEAR)

TIME: START HOUR – END 13:00-17:00HRS

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer question **ONE** and any other **THREE** questions.
- None programmable calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A
(Answer ALL questions in this section)

QUESTION 1:

- a) Demonstrate your knowledge on the operating systems concept by describing its evolution, functions and major types **(6 Marks)**
- b) Discuss any FOUR objectives of process scheduling in OS **(4 Marks)**

SECTION B
(Answer any THREE questions in this section)

QUESTION 2

- a) The traditional UNIX scheduler is a priority-based round robin scheduler (also called a multi-level round robin scheduler). Explain how the scheduler goes about favoring I/O bound jobs over long-running CPU-bound jobs. **(4 Marks)**
- b) Felix is a system administrator at Roche Pharmaceutical. He has been tasked with procuring an Operating System for the company's computers. He is torn between NTFS Filing System and FAT filing system. Discuss any THREE features of NTFS. **(6 Marks)**

QUESTION 3

- a) Virtual machine technology, often just called virtualization, makes one computer behave as several computers by sharing the resources of a single computer between multiple virtual machines. Discuss the benefits of having

Virtual Machine technology in a System Administrator's computer. **(5 Marks)**

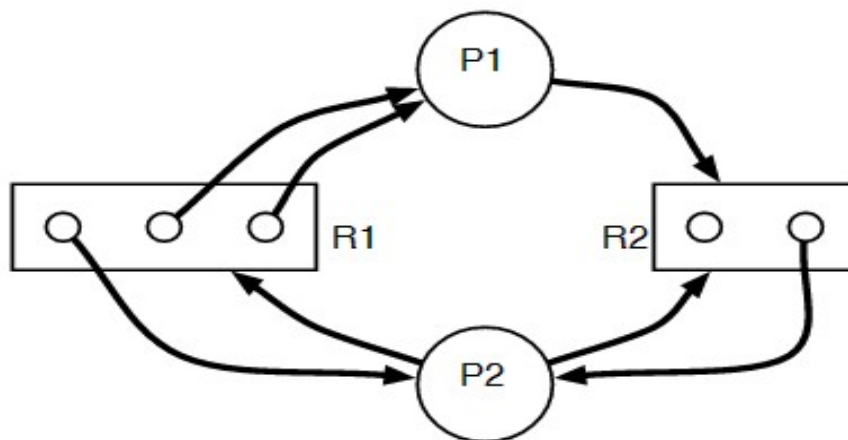
b) As a process executes, it changes state. Describe the Five-state of process

(5

Marks)

QUESTION 4

a) Consider the following resource allocation graph.



- Justify if the system is deadlocked or not. **(2 Marks)**
- Explain the status of the system if P1's request for R2 is granted first. **(3**

Marks)

- Explain the status if P2's request for R2 is granted first. **(3 Marks)**
- State any TWO conditions to avoid deadlock occurrence. **(2 Marks)**

QUESTION 5

- I/O devices can be divided into TWO categories. Discuss. **(4 Marks)**
- Describe the significance of memory-mapped I/O in the operating system's role of managing I/O devices. **(6 Marks)**

QUESTION 6

“An Operating system security enhances the overall security of a Computer System”. Discuss this statement using examples. **(10 Marks)**

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