



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)

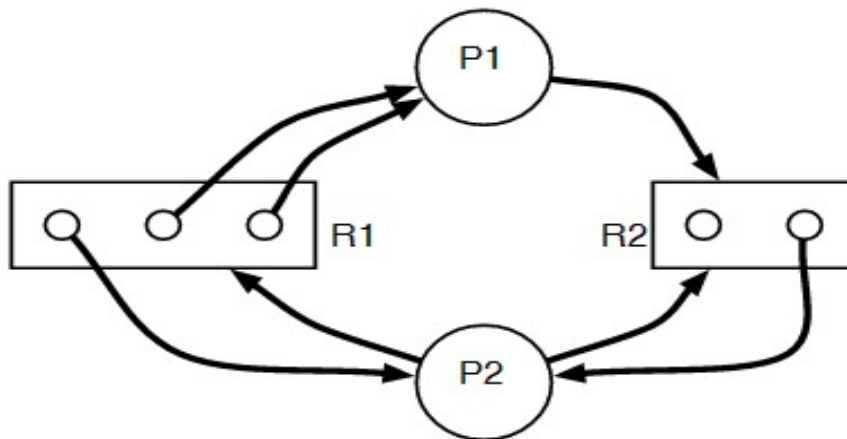
QUESTION 1:

- a) Operating systems is a multifaceted concept. Demonstrate your knowledge of this concept by describing the evolution, functions and major types of operating systems **(6 Marks)**
- b) Discuss any FOUR objectives of the process scheduling function **(4 Marks)**

SECTION B
(Answer any THREE questions in this section)

QUESTION 2

- a) Consider the following resource allocation graph.



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

(3

Marks)

- iii. Explain the status if P2's request for R2 is granted first. **(3 Marks)**
- iv. State any TWO conditions to avoid deadlock occurrence. **(2 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) 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) Austin 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 5

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

QUESTION 6

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

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