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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN COMPUTER SCIENCE
KCS 202 – INTRODUCTION TO OPERATING SYSTEMS

Date: 19TH April 2024
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Describe the following terms in operating Systems
i) Deadlock
ii) CPU scheduler
iii) Concurrency (6 Marks)
- b) Explain the three fundamental goals of an operating system in Memory Management (6 Marks)
- c) Highlight Six guidelines for Windows operating system security. (6 Marks)
- d) Describe at least three key differences between DSS and MIS types of information systems. (6 Marks)
- e) Discuss how Internet has enabled the rapid growth of electronic commerce in the society (6 Marks)

QUESTION TWO (20 MARKS)

- a) Describe three types of operating systems (3 Marks)
- b) Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	Burst time	Priority
P ₀	8	2
P ₁	1	1
P ₂	2	3
P ₃	1	4
P ₄	2	1

The processes are assumed to have arrived in the order P₀, P₁, P₂, P₃, P₄, all at time 0. Use an illustration to show the execution of these processes using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a smaller priority number implies a higher priority), and round robin (quantum=1). (8 Marks)

- c) Discuss the turnaround time of each process for each of the scheduling algorithms in (i) above? (4 Marks)
- d) Discuss different process states that changes as a process is being executed. (5 Marks)

QUESTION THREE (20 MARKS)

- a) The operating system is responsible for different activities regarding to file system management and explain any seven Functions of those activities. (7 Marks)
- b) Using the memory hierarchy, discuss how the cache technology improves the performance of an operating system. (5 Marks)
- c) Describe the two models of inter-process communication as a component managed by an operating system. (8 Marks)

QUESTION FOUR (20 MARKS)

- a) Clearly explain the main tasks of the kernel in the operating system. (4 Marks)
- b) Describe four features of the first come, first served scheduling algorithm. (8 Marks)
- c) The operating system prioritizes processes and uses various algorithms to schedule them. The operating system manages file systems. Discuss. (8 Marks)

QUESTION FIVE (20 MARKS)

- a) Describe how buffering can improve the performance of a computer system. (4 Marks)
- b) The OS performs the task of scheduling processes based on priorities using different algorithms. Explain any four of these algorithms of process scheduling. (8 Marks)
- c) Discuss any four of these process scheduling algorithms. (8 Marks)