KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
KCS 2202 – COMPUTER OPERATING SYSTEMS

Date: 19TH April 2024
Time: 8:30AM – 10:30AM

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 P_0, P_1, P_2, P_3, P_4, 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)