

**END SEMESTER EXAMINATION - APRIL 2026****SEMESTER 2: INTEGRATED M.Sc. PROGRAMME COMPUTER SCIENCE -DATA SCIENCE****COURSE : 21UP2CRMCP06 - OPERATING SYSTEMS***(For Regular 2025 Admission and Improvement / Supplementary 2024/2023/2022/2021 Admissions)*

Time : Three Hours

Max. Weights: 30

**PART A****Answer any 8 questions**

1. Mention the function of limit register.
2. Expand the term API.
3. Define the concept - page replacement.
4. Define the concept - multithreading.
5. Concurrent access to shared data may result in data -----.
6. State what it signifies when the valid-invalid bit of the page table is set to 'i'.
7. A ----- path name defines a path from the current directory.
8. In CPU scheduling, as the ----- is higher, the number of context switching is minimum.
9. Define claim edge in resource allocation graph.
10. List any two data structures used in banker's algorithm.

**(1 x 8 = 8 Weight)****PART B****Answer any 6 questions**

11. Explain briefly the queuing diagram representation of process scheduling.
12. Examine the methods by which processes can be aborted to recover from deadlock.
13. The organization of files involves the use of directories and examining its structure. Prepare short notes on the directory storage structure.
14. Discuss the benefits of multithreaded programming.
15. Describe the graphical interface that the operating system provides.
16. Discuss the solutions to various types of fragmentation.
17. Discuss how semaphores can be used to solve various synchronization problems.
18. Explain the concept - thrashing.

**(2 x 6 = 12 Weight)****PART C****Answer any 2 questions**

19. Write short notes on Batch Operating Systems and Multiprogramming Operating Systems.
20. Given a 32-byte memory size and 4-byte page size, explain how the user's view of memory is mapped to the physical memory.

21. Examine Round-Robin scheduling in detail.
22. Illustrate the concept of safe, unsafe and deadlocked states with an example.

**(5 x 2 = 10 Weight)**

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Understand the fundamental concepts of an Operating System.	An	2, 15, 19	8
CO 2	Identify how the OS manages process execution.	E	4, 8, 11, 14, 21	11
CO 3	Examine the need for process synchronization and communication.	An	5, 9, 10, 12, 17, 22	12
CO 4	Analyze the need for memory management.	E	1, 3, 6, 16, 18, 20	12
CO 5	Understand how OS manages files and directories.	An	7, 13	3

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;