

St. Claret College

Autonomous, Bengaluru

UG END SEMESTER EXAMINATION-MAY 2025

BCA II SEMESTER

CA2324 : OPERATING SYSTEM

TIME: 3 hours.

MAX. MARKS: 80

This paper contains TWO printed pages and FOUR parts

Instructions:

1. Verify and ensure that the question paper is completely printed.
2. Any discrepancies or questions about the exam paper must be reported to the COE within 1 hour after the examination.
3. Students must check the course title and course code before answering the questions.

PART-A

Answer ALL questions. Each answer carries ONE mark.

[10 x 1 = 10]

1. Which memory is used to store frequently accessed data?
a) RAM b) ROM c) Cache d) Hard Disk
2. Which of the following is the basic operation of a computer?
a) Input b) Processing c) Output d) All of the above
3. What is swapping in memory management?
a) Moving data between RAM and CPU b) Moving processes in and out of memory
c) Moving instructions between ALU and CU d) Transferring files between systems
4. Which of the following is a solution to the critical section problem?
a) Deadlock b) Peterson's Algorithm
c) Page Fault d) Thrashing
5. What is the main objective of process scheduling?
a) Minimize CPU usage b) Maximize response time
c) Maximize CPU utilization and throughput d) Minimize I/O operations
6. What is paging?
a) Dividing memory into fixed-size blocks b) Dividing memory into variable-size segments
c) Swapping memory to disk d) Allocating non-contiguous memory
7. What is an advantage of paging?
a) No fragmentation b) Faster execution
c) Easy memory management d) Allows non-contiguous memory allocation
8. What is a file?
a) A collection of related data b) A memory segment c) A process state d) A page in memory
9. Which of the following is a security mechanism?
a) Virtual Memory b) Firewall c) CPU Scheduler d) Page Replacement
10. Which part of a Linux system interacts with user commands?
a) Kernel b) Shell c) Hardware d) Page Table



PART-B

Answer any **FIVE** questions. Each answer carries **TWO** marks.

[5 x 2 = 10]

11. What is an Operating System? Give two examples of OS.
12. What is Process Scheduling?
13. Define different methods of handling deadlocks.
14. What is Pure Demand Paging?
15. List the various File Attributes.
16. Define File System Structure.
17. What is the use of the 'chmod' command?

PART-C

Answer any **FOUR** questions. Each answer carries **FIVE** marks.

[4 x 5 = 20]

18. Explain the state of process.
19. How Mutex locks is used to solve critical section problem? Explain with an example
20. Explain Banker's algorithm for dead lock avoidance.
21. Explain Logical and Physical address space with example.
22. Describe the working of Translation look-aside Buffer.
23. Explain any five File related commands in Linux

PART-D

Answer any **FOUR** questions. Each answer carries **TEN** marks.

[4 x 10 = 40]

24. Explain Operating System Services. 10M
25. a. Differentiate between different types schedulers. 5M
b. Explain dining philosopher's problem along with its solution. 5M
26. Consider the following set of process with the length of CPU burst time and arrival time

Process	Burst Time in ms
P1	5
P2	7
P3	4
P4	2

Draw the Gantt chart illustrating the execution of the process using SJF and Round Robin algorithm with the time slice of 2ms. Find the average waiting time and turn-around time. Process are assumed to arrive at the time zero in the order P1,P2,P3,P4. 10M

- 27 a. Explain the working of Last in First Out (LIFO) Page Replacement Algorithm with a example. 5M
Write its advantages and disadvantages. 5M
b. Explain steps in handling Page Fault. 5M
- 28 a. What is Virtual Memory? Explain the working process of Virtual Memory. 5M
b. Explain Frame allocation algorithm. 5M
- 29 a. Explain Linux system architecture with a suitable diagram. 6M
b. Mention the differences between internal and external commands in Linux. 4M