

Roll.No.

25UDSCT5005

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai - 600 044.

B.Sc.Cs with DS - END SEMESTER EXAMINATIONS - NOVEMBER 2025

SEMESTER - V

**25UDSCT5005 - Operating System**

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

### Section B

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. Explain the structure and operations of an Operating System
2. Describe the various CPU scheduling algorithms.
3. Discuss the Critical Section Problem and how synchronization hardware helps to solve it.
4. Explain deadlock prevention and avoidance techniques with examples.
5. Compare and contrast contiguous and non-contiguous memory allocation.
6. Describe the paging and segmentation mechanisms in memory management.
7. Explain page replacement algorithms and their role in virtual memory.
8. Discuss file system structures and allocation methods.

### Section C

Answer any **THREE** questions ( $3 \times 10 = 30$  Marks)

9. Explain the services provided by an Operating System and discuss its design and implementation strategies.
10. Analyze the different methods for handling deadlocks and suggest suitable solutions for real-time systems.
11. Evaluate different memory management techniques and justify the importance of virtual memory.
12. Examine the implementation of file system management and its protection mechanisms.
13. Sketch out the transition diagram of the process states and explain the importance of Process Control Block in process management.

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