

KAMARAJ COLLEGE (Autonomous)

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(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

THOOTHUKUDI – 628 003

(6 Pages)

Reg. No:

Question Code No : 25001404

Course Code: 25PECA11

PG Degree - End Semester Examinations, November 2025

First Semester

M.C.A

Advanced Operating Systems

(For those who joined in July 2025 onwards)

Time : 3 Hours

Maximum : 75 Marks

PART – A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer:

1. Which of the following is not an example of a real-time operating system?
(a) VxWorks (b) Windows
(c) MS-DOS (d) QNX
2. Which of the following is a type of scheduling algorithm?
(a) Round robin (b) Depth first search

- (c) Breadth first search (d) Dijkstra's algorithm
3. Who introduced the concept of logical clocks for distributed systems?
- (a) Dijkstra (b) Lamport
(c) Peterson (d) Hoare
4. Which of the following best describes a distributed file system?
- (a) Files are stored only on a single local disk.
(b) Files are shared and accessed transparently across multiple machines.
(c) Files are always replicated on every node.
(d) Files cannot be updated in distributed systems.
5. Which of the following is not a characteristic of RTOS?
- (a) Determinism (b) Safety
(c) Low reliability (d) Responsiveness
6. Which scheduling algorithm is most commonly used in real-time systems?
- (a) Shortest Job Next (b) Rate Monotonic Scheduling
(c) Round Robin (d) FIFO
7. Which of the following is not a handheld operating system?

- (a) Palm OS (b) Symbian
(c) Windows XP (d) Android
8. Palm OS was primarily designed for
(a) Gaming consoles (b) PDAs
(c) Mainframe computers (d) Servers
9. Which Linux subsystem manages CPU scheduling?
(a) Kernel Scheduler (b) File System
(c) Process Manager (d) Memory Manager
10. In Linux, which command is used to display currently running processes?
(a) ls (b) ps
(c) cat (d) chmod

PART - B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

11. (a) Illustrate in a detail about the multiprocessor system with an architecture diagram.

(OR)

- (b) Check whether the system is in a safe state or unsafe state using Banker's example.
12. (a) Discuss the issues in distributed file systems with

suitable examples.

(OR)

(b) Differentiate between centralized and distributed deadlock detection strategies.

13. (a) Construct the basic model of a real-time system and explain its tasks.

(OR)

(b) Demonstrate the working methodology of Rate Monotonic Scheduling with an example task set.

14. (a) List out the security challenges while using handheld operating systems.

(OR)

(b) Compare Palm OS, Symbian and Android OS in terms of features and limitations.

15. (a) Illustrate the various Linux memory management techniques.

(OR)

(b) Illustrate the iOS architecture with a neat diagram.

PART - C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 600 words.

16. (a) Explain in detail about the various deadlock handling techniques (prevention, avoidance, detection, recovery).

(OR)

- (b) Identify the importance of process scheduling by comparing FCFS, SJF and Round Robin.

17. (a) Write a distributed deadlock detection algorithm with a suitable example.

(OR)

- (b) Construct a scheme for implementing Lamport's logical clocks in a distributed system.

18. (a) Identify the role of safety and reliability in real-time task scheduling.

(OR)

- (b) Compare hard and soft real-time systems with suitable application case studies.

19. (a) Assess the architecture of Android OS and its role in handheld system development.

(OR)

(b) Compare and contrast different handheld OS (Palm, Symbian, Android) in terms of performance and usability.

20. (a) Give a comparison of Linux and iOS in terms of scheduling, memory management and file handling.

(OR)

(b) Explain in detail about the SDK framework with diagram.