



45817



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – M.Tech.(CSE)-2025

Course Name – Advanced Operating Systems

Course Code - MTS27504 (T)

(Semester II)

Library
Brainware University
398, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125

Full Marks : 40

Time : 2:0 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 10=10

1. Choose the correct alternative from the following :

- (i) Identify the main disadvantage of the token-based approach for achieving mutual exclusion in distributed systems.
 - a) It requires synchronized clocks
 - b) It may lead to starvation
 - c) It may result in the token being lost
 - d) It is prone to deadlock
- (ii) Identify correct option: A distributed scheduling system that is said to be "work-conserving".
 - a) No jobs are left in the queue when idle nodes are available
 - b) Jobs are always distributed to the node with the highest CPU power
 - c) The network is always busy transferring jobs
 - d) Jobs are only assigned to the central node for execution
- (iii) Select the appropriate example of a distributed multimedia file system.
 - a) Google File System (GFS)
 - b) YouTube's content delivery network
 - c) Hadoop Distributed File System (HDFS)
 - d) Amazon S3
- (iv) Select the main goal of multiprocessor operating systems.
 - a) Improve I/O speed only
 - b) Increase system throughput and reliability
 - c) Reduce memory usage
 - d) Eliminate synchronization
- (v) Select the action taken by the operating system when a page fault occurs in demand paging.
 - a) Terminates the process immediately
 - b) Loads the required page into memory
 - c) Clears the page table
 - d) Flushes the TLB permanently
- (vi) Choose the main limitation of s5fs compared to FFS.
 - a) Lack of directories
 - b) Poor performance due to small block size
 - c) No inodes
 - d) No buffer cache
- (vii) Choose the correct description of special-purpose file systems.
 - a) General storage systems
 - b) Designed for specific kernel services
 - c) Distributed systems
 - d) Multimedia systems

(viii) Identify the nature of the /proc file system.

- a) Persistent disk file system
- b) Virtual file system
- c) Network file system
- d) Journaling file system

(ix) Select the runtime issue that arises due to excessive background processes and poor resource management

- a) Device overheating
- b) Inconsistent UI responsiveness
- c) Limited multitasking ability
- d) Reduced battery life

(x) Choose the purpose of a 'lock' in database systems.

- a) To ensure all transactions are processed sequentially
- b) To prevent unauthorized access to data
- c) To control access to database resources and maintain consistency
- d) To manage the physical storage of data on disk

Group-B

(Short Answer Type Questions)

3 x 5=15

- 2. Indicate the importance of deadlock prevention in multiprocessor systems (3)
- 3. Express the importance of process synchronization in multiprocessor operating systems. (3)
- 4. Describe differences between symmetric and asymmetric multiprocessing. (3)
- 5. Differentiate Multitasking Systems and Multiprocessor systems. (3)
- 6. Explain the role of clock interrupts in traditional UNIX process scheduling. (3)

OR

Explain the concept of Distributed Shared Memory (DSM) and state one major challenge associated with it. (3)

Group-C

(Long Answer Type Questions)

5 x 3=15

- 7. Discuss the following terms related to distributed file systems: file replication, file caching, fault tolerance. (5)
- 8. Describe the role of the Global Descriptor Table (GDT) in protected mode memory management. (5)
- 9. Explain common runtime issues faced by mobile applications. (5)

OR

Explain affect of runtime performance with garbage collection mechanisms in mobile operating systems. (5)

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