

Serial No. of Booklet :

Code No. : 1299

B. C. A. (Fourth Semester) Examination, 2023-24

AFFIX PRESCRIBED
RUBBER STAMP

Paper Fifth

OPERATING SYSTEM

Course Code—BCA-405T (Major)

In Figures (अंकों में) :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Roll No.

In Words (शब्दों में) :

Date :

Time : 2 Hrs.

Signature of Invigilator

कक्ष निरीक्षक के हस्ताक्षर

Max. Marks : 75

Important Instructions :

1. The candidate will write his/her Roll Number only at the places provided for, i. e., on the cover page and on the OMR answer sheet at the end and nowhere else.
2. Immediately on receipt of the question booklet, the candidate should check up the booklet and ensure that it contains all the pages and that no question is missing. If the candidate finds any discrepancy in the question booklet, he/she should report the invigilator within 10 minutes of the issue of this booklet and a fresh question booklet without any discrepancy is obtained.
3. No second question booklet shall be given to a candidate under any circumstances after 10 minutes. The candidate should be careful in handling the question booklet and in filling the OMR answer sheet given separately with this booklet.

महत्त्वपूर्ण निर्देश :

1. अभ्यर्थी अपने अनुक्रमांक केवल उन्हीं स्थानों पर लिखेंगे जो इसके लिए दिये गये हैं, अर्थात् प्रश्न पुस्तिका के मुख्य पृष्ठ तथा साथ दिये गये ओ. एम. आर. उत्तर पत्र पर, तथा अन्यत्र कहीं नहीं लिखेंगे।
2. प्रश्न पुस्तिका मिलते ही अभ्यर्थी को जाँच करके सुनिश्चित कर लेना चाहिए कि पुस्तिका में पूरे पृष्ठ हैं और कोई प्रश्न छूटा तो नहीं है। यदि कोई विसंगति है तो प्रश्न पुस्तिका मिलने के 10 मिनट के भीतर ही कक्ष परिप्रेक्षक को सूचित करना चाहिए और बिना त्रुटि की दूसरी प्रश्न पुस्तिका प्राप्त कर लेना चाहिए।
3. किसी भी परिस्थिति में 10 मिनट बाद अभ्यर्थी को दूसरी प्रश्न पुस्तिका नहीं मिलेगी। अभ्यर्थी को प्रश्न पुस्तिका को उपयोग में लाने और ओ. एम. आर. उत्तर पत्र को भरने में सावधानी बरतनी चाहिए।

(Contd. on the last page / अन्य निर्देश अन्तिम पृ. पर)

1. What is contiguous allocation ?
 - (A) Allocating memory to processes in non-contiguous blocks
 - (B) Allocating memory to processes in contiguous blocks
 - (C) Allocating memory to processes in random blocks
 - (D) Deallocating memory from processes

2. What is paging in memory management ?
 - (A) Moving processes between main memory and disk
 - (B) Allocating memory to processes in contiguous blocks
 - (C) Allocating memory to processes in non-contiguous blocks
 - (D) Dividing physical memory into fixed-size blocks

3. What is segmentation in memory management ?
 - (A) Dividing physical memory into fixed-size blocks
 - (B) Dividing logical memory into variable-size segments
 - (C) Moving processes between main memory and disk
 - (D) Allocating memory to processes in contiguous blocks

4. Which of the following is a primary task of memory management ?
 - (A) Allocating CPU time to processes
 - (B) Allocating and deallocating memory
 - (C) Managing input/output devices
 - (D) Managing user accounts

5. What does swapping involve in memory management ?
 - (A) Moving processes between different memory locations
 - (B) Fragmenting memory into smaller units
 - (C) Deleting processes from memory
 - (D) Allocating memory to new processes

6. Which memory management technique divides physical memory into fixed-size blocks ?
- (A) Segmentation
 - (B) Swapping
 - (C) Paging
 - (D) Contiguous allocation
7. What is the purpose of logical address space in memory management ?
- (A) It represents the actual location of memory.
 - (B) It is used to store temporary data.
 - (C) It controls input/output operations.
 - (D) It is an abstraction used by the CPU.
8. What is the advantage of contiguous allocation in memory management ?
- (A) It allows for dynamic memory allocation.
 - (B) It increases the speed of memory access.
 - (C) It simplifies memory management operations.
 - (D) It reduces memory fragmentation.
9. Which of the following memory of the computer is used to speed up the computer processing ?
- (A) Cache memory
 - (B) Pen drive
 - (C) RAM
 - (D) ROM
10. What is the main advantage of paging in memory management ?
- (A) It simplifies memory management operations.
 - (B) It increases the speed of memory access.
 - (C) It reduces memory fragmentation.
 - (D) It allows for dynamic memory allocation.
11. What is virtual memory ?
- (A) Physical memory installed on the computer's motherboard
 - (B) A memory management technique that uses disk space to extend RAM
 - (C) An external storage device used to store files and documents
 - (D) A type of cache memory used by the CPU

12. What is demand paging ?
- (A) A technique where memory pages are permanently stored in RAM.
 - (B) A technique where memory pages are loaded into cache memory.
 - (C) A technique where memory pages are stored in secondary storage.
 - (D) A technique where memory pages are loaded into RAM only when needed.
13. The address in the main memory is known as _____.
- (A) Memory address
 - (B) Logical address
 - (C) Physical address
 - (D) None of the above
14. What is the purpose of page replacement in virtual memory ?
- (A) To increase the size of RAM
 - (B) To decrease the size of RAM
 - (C) To manage memory allocation efficiently
 - (D) To increase the speed of disk storage
15. Which of the following is a page-replacement algorithm used in virtual memory ?
- (A) Thrashing
 - (B) Contiguous allocation
 - (C) RAID (Redundant Array of Independent Disks)
 - (D) FIFO (First-In-First-Out)
16. What is the performance impact of demand paging ?
- (A) It improves overall system performance.
 - (B) It may introduce overhead due to page faults.
 - (C) It decreases disk I/O operations.
 - (D) It increases CPU utilization.
17. How is the allocation of frames managed in virtual memory ?
- (A) By the operating system
 - (B) By the disk controller
 - (C) By the CPU
 - (D) By the user

18. What is thrashing in virtual memory ?
- (A) A process of efficient memory management
 - (B) A process of increasing CPU utilization
 - (C) A process of excessive paging activity
 - (D) A process of disk optimization
19. What is a consideration in virtual memory management ?
- (A) Increasing disk speed
 - (B) Reducing CPU utilization
 - (C) Decreasing RAM capacity
 - (D) Avoiding excessive page faults
20. What does demand paging aim to minimize ?
- (A) Disk space usage
 - (B) Memory access latency
 - (C) CPU utilization
 - (D) Page replacement algorithms
21. Which of the following is a characteristic of demand paging ?
- (A) Pages are permanently stored in RAM.
 - (B) Pages are loaded into RAM only when needed.
 - (C) Pages are stored in cache memory.
 - (D) Pages are stored in secondary storage.
22. What does the page-replacement algorithm FIFO stand for ?
- (A) First-In-First-Out
 - (B) First-In-Last-Out
 - (C) Fast-In-Fast-Out
 - (D) First-Out-First-In
23. What is the primary goal of page replacement in virtual memory ?
- (A) To increase the size of RAM
 - (B) To decrease the size of RAM
 - (C) Both (A) and (B)
 - (D) To manage memory allocation efficiently

24. How does demand paging affect system performance ?
- (A) It may introduce overhead due to page faults.
 - (B) It decreases CPU utilization.
 - (C) It reduces disk space usage.
 - (D) It increases RAM capacity.
25. Who manages the allocation of frames in virtual memory ?
- (A) The CPU
 - (B) The operating system
 - (C) The disk controller
 - (D) The user
26. What is thrashing in the context of virtual memory ?
- (A) Excessive paging activity
 - (B) Efficient memory management
 - (C) High disk speed
 - (D) Low CPU utilization
27. What is an important consideration in virtual memory management ?
- (A) Increasing disk speed
 - (B) Reducing CPU utilization
 - (C) Avoiding excessive page faults
 - (D) Decreasing RAM capacity
28. What is a process in the context of operating systems ?
- (A) A physical device connected to the computer
 - (B) A program in execution
 - (C) A storage device used for data backup
 - (D) A hardware component responsible for memory management
29. What is process scheduling ?
- (A) Arranging processes in memory
 - (B) Allocating CPU time to processes
 - (C) Managing input/output operations
 - (D) Storing data in secondary storage
30. What is a criterion commonly used for CPU scheduling ?
- (A) Disk space availability
 - (B) Process execution speed
 - (C) Process priority
 - (D) RAM capacity

31. What is a scheduling algorithm ?
- (A) A hardware component of the CPU
 - (B) A method for allocating CPU time to processes
 - (C) A storage device used for long-term data storage
 - (D) A software application for process management
32. What is multiple-processor scheduling ?
- (A) Scheduling processes on multiple hard drives
 - (B) Scheduling processes on multiple networks
 - (C) Scheduling processes on multiple monitors
 - (D) Scheduling processes on multiple CPUs
33. What is process synchronization ?
- (A) Coordinating the execution of multiple processes
 - (B) Allocating memory to processes
 - (C) Managing input/output operations
 - (D) Storing data in secondary storage
34. What is the critical-section problem in process synchronization ?
- (A) Ensuring only one process can enter a critical section at a time
 - (B) Allocating CPU time to processes
 - (C) Managing input/output operations
 - (D) Storing data in secondary storage
35. What are semaphores in process synchronization ?
- (A) A type of storage device
 - (B) CPU scheduling algorithms
 - (C) Synchronization primitives used to control access to resources
 - (D) Multiple-processor scheduling techniques
36. Which of the following is a classical problem of synchronization ?
- (A) Memory fragmentation
 - (B) Disk fragmentation
 - (C) CPU scheduling
 - (D) Deadlock

37. What is the goal of multiple-processor scheduling ?
- (A) To allocate memory to processes efficiently
 - (B) To store data in secondary storage
 - (C) To manage input/output operations
 - (D) To coordinate process execution across multiple CPUs
38. What is the critical-section problem concerned with in process synchronization ?
- (A) Allocating CPU time to processes
 - (B) Coordinating access to shared resources
 - (C) Managing input/output operations
 - (D) Allocating memory to processes
39. What does synchronization hardware facilitate in process synchronization ?
- (A) Allocation of memory to processes
 - (B) Coordination of process execution
 - (C) Management of input/output operations
 - (D) Enforcement of synchronization primitives
40. UNIX is written in which language ?
- (A) C++
 - (B) C#
 - (C) C
 - (D) .NET
41. Which of the following is a common problem in process synchronization ?
- (A) Deadlock
 - (B) Memory fragmentation
 - (C) Disk fragmentation
 - (D) Thrashing

42. What is a deadlock in the context of operating systems ?
- (A) A situation where a process terminates unexpectedly.
 - (B) A situation where multiple processes are waiting for resources held by each other.
 - (C) A situation where a process consumes excessive CPU time.
 - (D) A situation where memory allocation fails due to insufficient resources.
43. Which of these memory devices can be removed from the computer ?
- (A) RAM
 - (B) DVD
 - (C) Register
 - (D) None of the above
44. Which method for handling deadlocks allows them to occur but detects and recovers from them ?
- (A) Deadlock prevention
 - (B) Deadlock avoidance
 - (C) Deadlock detection
 - (D) Deadlock recovery
45. What is deadlock prevention ?
- (A) A method that ensures deadlocks never occur in the system.
 - (B) A method that allows deadlocks to occur and then resolves them.
 - (C) A method that detects and recovers from deadlocks.
 - (D) A method that prevents resources from being held indefinitely.
46. What does deadlock avoidance aim to do ?
- (A) Ensure deadlocks never occur
 - (B) Detect and recover from deadlocks
 - (C) Allow deadlocks to occur and then resolve them
 - (D) Avoid the conditions that can lead to deadlocks
47. What is the primary goal of deadlock detection ?
- (A) To prevent deadlocks from occurring
 - (B) To avoid the conditions that lead to deadlocks
 - (C) To detect when a deadlock has occurred
 - (D) To recover from deadlocks once they occur

48. What does recovery from deadlock involve ?
- (A) Preventing deadlocks from occurring
 - (B) Detecting when a deadlock has occurred and resolving it
 - (C) Avoiding the conditions that can lead to deadlocks
 - (D) None of the above
49. What is a resource allocation graph used for in deadlock prevention ?
- (A) To detect when a deadlock has occurred
 - (B) To avoid the conditions that lead to deadlocks
 - (C) To represent resource allocation and detect cycles
 - (D) To recover resources from processes involved in a deadlock
50. What is the banker's algorithm used for in deadlock avoidance ?
- (A) To prevent deadlocks from occurring
 - (B) To detect when a deadlock has occurred
 - (C) To avoid unsafe states by allocating resources dynamically
 - (D) To recover resources from processes involved in a deadlock
51. What is deadlock detection based on ?
- (A) Resource allocation graphs
 - (B) Banker's algorithm
 - (C) System model
 - (D) Methods for handling deadlocks
52. What is a deadlock characterized by in an operating system ?
- (A) Multiple processes accessing resources simultaneously
 - (B) Processes waiting indefinitely for resources held by each other
 - (C) A process consuming excessive CPU time
 - (D) Processes terminating unexpectedly
53. What is device management in operating systems ?
- (A) Managing user accounts
 - (B) Managing input/output devices
 - (C) Managing CPU scheduling
 - (D) Managing memory allocation

54. Which type of device management involves devices exclusively dedicated to a single process ?
- (A) Shared devices
 - (B) Virtual devices
 - (C) Dedicated devices
 - (D) Integrated devices
55. What are shared devices in device management ?
- (A) Devices that are virtual representations
 - (B) Devices exclusively dedicated to a single process
 - (C) Devices directly connected to the CPU
 - (D) Devices accessible to multiple processes
56. What are virtual devices in device management ?
- (A) Devices that do not physically exist
 - (B) Devices directly connected to the CPU
 - (C) Devices exclusively dedicated to a single process
 - (D) Devices accessible to multiple processes
57. Which type of device is a keyboard ?
- (A) Input device
 - (B) Output device
 - (C) Storage device
 - (D) Secondary storage device
58. Which of the following is a storage device ?
- (A) Printer
 - (B) Scanner
 - (C) Hard disk drive
 - (D) Monitor
59. What is buffering in device management ?
- (A) Storing data temporarily during input/output operations
 - (B) Managing CPU time allocation
 - (C) Allocating memory to processes
 - (D) Managing user accounts
60. What is the purpose of disk structure in secondary storage ?
- (A) To manage CPU scheduling
 - (B) To allocate memory to processes
 - (C) To manage input/output devices
 - (D) To organize files and directories

61. What is disk scheduling ?
- (A) Organizing files and directories on a disk
 - (B) Managing input/output devices
 - (C) Allocating memory to processes
 - (D) Scheduling requests to read or write data on a disk
62. Which of the following is NOT a part of disk management ?
- (A) Disk scheduling
 - (B) CPU scheduling
 - (C) Swap-space management
 - (D) Disk reliability
63. What is swap-space management ?
- (A) Managing input/output devices
 - (B) Managing memory allocation on disk
 - (C) Managing CPU time allocation
 - (D) Managing user accounts
64. What does disk reliability refer to ?
- (A) How quickly data can be read from a disk
 - (B) The amount of data that can be stored on a disk
 - (C) The likelihood of a disk failing
 - (D) The physical size of a disk
65. Which of the following is a shared device ?
- (A) Printer
 - (B) Keyboard
 - (C) Mouse
 - (D) All of the above
66. Which of the following is a part of disk management ?
- (A) CPU scheduling
 - (B) Disk reliability
 - (C) Memory allocation
 - (D) User account management
67. What is swap-space management concerned with ?
- (A) Managing input/output devices
 - (B) Managing CPU time allocation
 - (C) Managing user accounts
 - (D) Managing memory allocation on disk
68. The 'megabytes' of computer storage capacity consists of _____.
- (A) one million bytes
 - (B) four million bytes
 - (C) three million bytes
 - (D) two million bytes

69. What is the main function of the command interpreter ?
- (A) To get and execute the next user-specified command
 - (B) To provide the interface between the API and application program
 - (C) To handle the files in the operating system
 - (D) None of the above
70. If a process fails, most operating system writes the error information to a _____.
- (A) new file
 - (B) another running process
 - (C) log file
 - (D) None of the above
71. In Operating Systems, which of the following is/are CPU scheduling algorithms ?
- (A) Priority
 - (B) Round Robin
 - (C) Shortest Job First
 - (D) All of the above
72. In a timeshare operating system, when the time slot assigned to a process is completed, the process switches from the current state to :
- (A) Suspended state
 - (B) Blocked state
 - (C) Ready state
 - (D) Terminated state
73. Which of the following is not an operating system ?
- (A) Oracle
 - (B) Windows
 - (C) Linux
 - (D) DOS
74. What is the full name of FAT ?
- (A) Font Attribute Table
 - (B) File Allocation Table
 - (C) Format Allocation Table
 - (D) File Attribute Table
75. When you delete a file in your computer, where does it go ?
- (A) Hard disk
 - (B) Taskbar
 - (C) My Documents
 - (D) Recycle bin
76. Which of the following is a single-user operating system ?
- (A) Windows
 - (B) LINUX
 - (C) MS-Dos
 - (D) None of the above
77. Which of the following computer memory is fastest ?
- (A) RAM
 - (B) Register
 - (C) ROM
 - (D) Hard disk

78. What is an operating system ?
- (A) A software that manages hardware resources and provides services for application programs
 - (B) A hardware component responsible for data storage
 - (C) A programming language used to develop applications
 - (D) A type of computer monitor
79. Which type of system executes jobs one after another without user interaction ?
- (A) Parallel Systems
 - (B) Time Sharing Systems
 - (C) Simple Batch Systems
 - (D) None of the above
80. What is the main advantage of multi-programmed batch systems ?
- (A) Lower memory utilization
 - (B) Slower execution time
 - (C) Limited user interaction
 - (D) Higher CPU utilization
81. Which type of system allows multiple users to interact with the computer simultaneously ?
- (A) Simple Batch Systems
 - (B) Time Sharing Systems
 - (C) Multi-programmed Batch Systems
 - (D) Personal Computer Systems
82. What type of system is commonly found on desktops and laptops ?
- (A) Parallel Systems
 - (B) Distributed Systems
 - (C) Real-Time Systems
 - (D) Personal Computer Systems
83. Which type of system utilizes multiple processors to perform computations simultaneously ?
- (A) Simple Batch Systems
 - (B) Multi-programmed Batch Systems
 - (C) Parallel Systems
 - (D) Time Sharing Systems
84. What is the primary characteristic of distributed systems ?
- (A) Centralized control
 - (B) Utilization of a single processor
 - (C) Independent processing units
 - (D) Limited scalability

85. Which type of system is designed to respond to events within a strict time frame ?
- (A) Real-Time Systems
 - (B) Simple Batch Systems
 - (C) Multi-programmed Batch Systems
 - (D) Time Sharing Systems
86. In a simple batch system, when are jobs typically executed ?
- (A) Simultaneously
 - (B) After user interaction
 - (C) On different computers
 - (D) One after another
87. What is the main purpose of an operating system ?
- (A) To perform calculations
 - (B) To store data permanently
 - (C) To design software applications
 - (D) To manage hardware resources and provide services for application programs
88. What is the primary characteristic of a multi-programmed batch system ?
- (A) Limited CPU utilization
 - (B) Concurrent execution of multiple jobs
 - (C) Sequential execution of jobs
 - (D) User interaction during job execution
89. Which type of system allows multiple users to share resources and interact with the computer simultaneously ?
- (A) Simple Batch Systems
 - (B) Multi-programmed Batch Systems
 - (C) Time Sharing Systems
 - (D) Real-Time Systems
90. What distinguishes a personal computer system from other types of systems ?
- (A) It is designed for individual use.
 - (B) It does not support multitasking.
 - (C) It has a centralized control unit.
 - (D) It is used primarily for scientific computing.

91. What is the main advantage of parallel systems ?
- (A) Reduced scalability
 - (B) Higher reliability
 - (C) Limited processing power
 - (D) Sequential execution of tasks
92. What characteristic makes distributed systems suitable for handling large-scale applications ?
- (A) Centralized control
 - (B) Independent processing units
 - (C) Limited communication between nodes
 - (D) Single point of failure
93. Which type of system is commonly used in environments where response time is critical ?
- (A) Simple Batch Systems
 - (B) Multi-programmed Batch Systems
 - (C) Real-Time Systems
 - (D) Personal Computer Systems
94. In a simple batch system, how are jobs typically submitted for execution ?
- (A) Through interactive commands
 - (B) Automatically without user intervention
 - (C) Via a graphical user interface
 - (D) Through a command-line interface
95. What is the primary purpose of a time-sharing system ?
- (A) To execute jobs sequentially
 - (B) To process large volumes of data offline
 - (C) To manage hardware resources efficiently
 - (D) To allow multiple users to interact with the computer simultaneously

96. What distinguishes a real-time system from other types of systems ?

- (A) It supports multitasking.
- (B) It executes tasks without strict time constraints.
- (C) It is used primarily for scientific computing.
- (D) It responds to events within a strict time frame.

97. Which type of system is commonly found in high-performance computing environments ?

- (A) Simple Batch Systems
- (B) Multi-programmed Batch Systems
- (C) Parallel Systems
- (D) Distributed Systems

98. What is the primary function of memory management in an operating system ?

- (A) To allocate and deallocate memory for processes
- (B) To manage computer peripherals
- (C) To manage hardware resources
- (D) To control input/output operations

99. What is the difference between logical and physical address space ?

- (A) Logical address space is the actual location of memory, while physical address space is an abstraction.
- (B) Logical address space is an abstraction, while physical address space is the actual location of memory.
- (C) Logical address space is used by the operating system, while physical address space is used by application programs.
- (D) There is no difference between logical and physical address space.

100. What is swapping in memory management ?

- (A) Moving processes between main memory and disk
- (B) Deleting processes from memory
- (C) Allocating memory to new processes
- (D) Fragmenting memory into smaller units