

3040

B.C.A. (III Sem.) Examination, 2024-25

Booklet Series

B

Bachelor of Computer Application

Operating System with the case study of unix and windows

(To be filled by the Candidate / निम्न पूर्तियाँ परीक्षार्थी स्वयं भरें)

[Time : 2 : 00 Hours

Roll No. (in figures)

[समय : 2 : 00 घण्टे

अनुक्रमांक (अंकों में)

[Maximum Marks : 70

Roll No. (in words)

[अधिकतम अंक : 70

अनुक्रमांक (शब्दों में)

Name of Examination Centre

परीक्षा केन्द्र का नाम

Signature of Invigilator

कक्ष निरीक्षक के हस्ताक्षर

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 75 questions. Examinee is required to answer any 65 questions in the OMR Answer-Sheet provided and not in the question booklet. In case Examinee attempts more than 65 Questions, first 65 attempted questions will be evaluated. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be immediately replaced.

(Remaining Instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 75 प्रश्न हैं। परीक्षार्थी को किन्हीं 65 प्रश्नों को दी गई ओएमआर आन्सर-शीट पर ही हल करना है। परीक्षार्थी द्वारा 65 से अधिक प्रश्नों को हल करने की स्थिति में, प्रथम 65 उत्तरों को ही मूल्यांकित किया जायेगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR उत्तर-पत्रक को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका, जिसमें कुछ भाग छपने से छूट गये हों या प्रश्न एक से अधिक बार छप गये हों या किसी भी प्रकार की कमी हो, उसे तुरन्त बदल लें।

(शेष निर्देश अन्तिम पृष्ठ पर)

1. In a Contiguous Allocation system, what is the term for the fixed-size memory block used to store a process?

- (A) Page
- (B) Frame**
- (C) Segment
- (D) Cluster

2. Which Page Replacement algorithm requires maintaining a counter for each page to track the number of times it has been accessed?

- ~~(A) FIFO (First-in-First-Out)~~
- (B) LRU (Least Recently Used)
- (C) Optimal Algorithm
- (D) LFU (Least Frequently Used)**

3. What is "Allocation of Frames" in the context of memory management in operating systems?

- (A) The process of dividing physical memory into fixed-size blocks.
- (B) The process of assigning memory frames to different processes**
- (C) The technique of moving pages of memory between RAM and secondary storage.
- (D) The process of allocating memory of processes before they request it.

4. What is a process in the context of an operating system?

- ~~(A) A program in execution~~
- (B) A storage device**
- (C) A file system
- (D) A peripheral device

5. Which memory allocation technique is commonly used in modern operating system due to its flexibility and efficient use of memory resources?

- ~~(A) Contiguous Allocation~~
- (B) Paging**
- (C) Segmentation
- (D) Fragmented Allocation

6. What is a process ID (PID) used for in Unix and Linux?

- (A) It is a unique identifier for a file
- (B) It is a unique identifier for a user**
- ~~(C) It is a unique identifier for a process~~
- (D) It is a unique identifier for a device

7. What is the role of Page Table in virtual memory systems?

- (A) To store pages of a book+
- (B) To map logical addresses to physical addresses ✓
- (C) To manage file storage
- (D) To control device drivers+

8. In Unix, which command is used to terminate a process?

- (A) stop
- (B) end
- (C) kill
- (D) terminate

9. Which scheduling algorithm provide equal priority to each process in the queue?

- (A) Round Robin
- (B) First-Come-First Serve (FCFS)
- (C) Shortest Job Next (SJN)
- (D) Priority Scheduling

10. In Time-Sharing Systems, the CPU is shared by multiple users by using:

- (A) Dedicated processors
- (B) Time slices for each process
- (C) Memory-only allocation
- (D) Batch processing-

11. Real-Time Systems are primarily used in:

- (A) Office environments
- (B) Gaming applications
- (C) Time-critical application like medical devices and industrial control
- (D) Educational environments

12. Fixed memory allocation refers to:

- (A) Dynamic memory allocation
- (B) Memory allocation that does not change during runtime
- (C) Allocation based on user input-
- (D) Allocating memory to a single application only

13. Which scheduling algorithm assigns the CPU to the process with the shortest burst time?

- (A) Round-robin
- (B) Priority scheduling
- (C) Shortest Job First (SJF)
- (D) First-Come, First-Served (FCFS)

14. In Windows, what is the name of the synchronization primitive used to protect critical sections of code?

- (A) Mutex
- (B) Semaphore
- (C) Barrier
- (D) Lock

✓ 15. Which of these is an area for temporary memory storage?

(A) Register

(B) Frame

(C) Buffer

(D) Accumulator

16. Which technology is used in CD (Compact disk)

(A) Electro Magnetic

(B) Laser

(C) Mechanical

(D) Electrical

✓ 17. When does Page fault occur?

(A) The page is present in memory

(B) The deadlock occurs

-(C) The page does not present in memory

(D) The Buffering occurs

18. What is the contiguous allocation?

(A) Each file must occupy a set of contiguous block on the disk

(B) Each file is a linked list of disk Block

(C) Block are placed together in one location

-(D) None of these

19. Virtual memory use disk space as an extension of.....

(A) Secondary storage

-(B) Primary storage

(C) Main memory

(D) None of these

✓ 20. Which of the following operating system does not support more than one program at a time?

(A) Linus

(B) Windows

(C) MAC

-(D) DOS

21. In a Simple Batch System, how are jobs typically submitted for execution?
- (A) By typing commands into a command -line interface. ✓
 - (B) Through a graphical user interface
 - ☒ (C) Via punched cards or job queues ✓
 - (D) By downloading them from the internet ✓
22. In a Time-sharing System, what happens if a user exceeds their allocated time slice for a program?
- ☒ (A) The program is terminated ✓
 - (B) The system reboots
 - (C) The user is locked out of the system
 - ☒ (D) The time slice is extended automatically ✓
23. What is the term for the area of secondary storage where swapped-out memory pages are stored temporarily?
- (A) The cache
 - (B) The page table
 - ☒ (C) The swap space or swap file ✓
 - (D) The kernel
24. In UNIX, which scheduling criterion is used in the default time-sharing scheduler?
- (A) First-Come-First-Serve (FCFS)
 - ☒ (B) Priority Scheduling ✓
 - (C) Round Robin
 - (D) Shortest Job Next (SJN)
25. What is the full form of BIOS?
- (A) Between input-output system
 - (B) Binary input-output system
 - ☒ (C) Basic input-output system ✓
 - (D) All of these
26. What is "thrashing" in virtual memory systems?
- ☒ (A) Excessive swapping of data between RAM and disk, causing a slowdown ✓
 - (B) Temporary halt in memory operations
 - (C) The use of outdated data in memory ✓
 - (D) Allocating too much memory to a single process ✓
27. Which scheduling algorithm assigns CPU time based on process priority?
- ☒ (A) First -Come First-Served ✓
 - (B) Shortest Job First
 - (C) Priority scheduling ✓
 - (D) Round-Robin

28. Deadlock prevention aims to:

- (A) Avoid all waiting conditions
- ☒ (B) Prevent at least one of the necessary deadlock conditions
- ☒ (C) Ensure all resources are allocated to one process
- ☒ (D) Allow only one process to run at a time

29. In Windows, which utility allows you to view and manipulate running processes, including ending them?

- (A) Task Scheduler
- (B) Task Viewer
- ☒ (C) Task Manager
- (D) Process Explorer

30. In deadlock avoidance, the Banker's Algorithm checks for:

- (A) Maximum resource utilization
- ☒ (B) Safe states where deadlock is avoided
- (C) Minimum memory requirements
- ☒ (D) Number of processes only

31. Which component of an operating system is responsible for managing hardware resources and providing services for software applications?

- ☒ (A) Kernel
- (B) Compiler
- (C) Debugger
- ☒ (D) User Interface

32. Which operating system is known for its command-line interface and is often used in server environments?

- (A) Windows
- (B) MacOS
- ☒ (C) UNIX
- (D) Android

33. Which file system is commonly used in Windows operating systems for organizing and managing data on storage devices?

- ☒ (A) NTFS
- (B) Ext4
- (C) FAT32
- (D) HFS+

34. What is an operating system (OS)?

- (A) A type of computer hardware
- (B) A collection of computer programs
- (C) A set of input and output devices
- (D) A central processing unit (CPU)

35. In Unix, which scheduling policy allows a process to run until it voluntarily gives up the CPU?

- (A) Round Robin
- (B) Preemptive Scheduling
- (C) Cooperative Scheduling
- (D) Shortest Job Next (SJN)

36. In memory management, what is the difference between logical and physical address space?

- (A) Logical addresses are used by the hardware, physical addresses by software
- (B) Logical addresses are generated by the CPU, physical addresses are locations in memory
- (C) Both terms refer to the same concept
- (D) Logical addresses are for storage devices only

37. Which Windows operating system introduced the concept of the "Start" menu and taskbar?

- (A) Windows 95
- (B) Windows XP
- (C) Windows 7
- (D) Windows 10

38. In the context of UNIX, what is the primary function of the "Shell"?

- (A) Managing hardware resources
- (B) Handling system calls
- (C) Providing a user interface
- (D) Managing file permissions

39. Which of the following is a command-line shell commonly used in Windows operating systems?

- (A) Bash
- (B) Power Shell
- (C) Terminal
- (D) Command Prompt

40. Which mechanism is commonly used for inter-process communication and synchronization in UNIX?

- (A) Semaphores ✓
- (B) Mutexes
- (C) Condition variables
- (D) Spinlocks

41. Which of the following memory management techniques uses pages and frames?

- ✓(A) Segmentation
- (B) Paging
- (C) Swapping
- (D) Contiguous allocation

42. What is the primary advantage of using a Simple Batch System for job processing?

- ✓(A) High-level security for use data.
- (B) Efficient multitasking and multitasking capabilities.
- (C) Automation and efficient utilization of computing resources.
- (D) Compatibility with modern software applications.

43. Which component of a Simple Batch System is responsible for managing the execution of jobs in the queue and allocating system resources?

- (A) Command Interpreter
- ✓(B) Scheduler
- (C) Device Driver
- (D) Compiler

44. In a Simple Batch System, what happens if a job encounters an error during execution?

- (A) The job is automatically restarted
- (B) The system crashes
- ✓(C) The error is logged, and the next job in the queue is executed.
- (D) The user is notified, and they must manually correct the error

45. What modern operating systems have evolved from the concept to Multi-programming Batch Systems, incorporating advanced multi-tasking time sharing features?

- (A) Windows and iOS
- (B) MacOS and Linux
- (C) UNIX and Linux
- ✓(D) Windows and UNIX-like systems

46. Which page replacement algorithm replaces the page that has not been used for the longest period?
- (A) FIFO
 - ☒ (B) LRU
 - (C) Optimal
 - (D) Clock -
47. Which PC operating system is known for its widespread use in the business world and is often used on desktops and laptops?
- (A) UNIX
 - (B) Linux
 - ☒ (C) Windows
 - (D) macOS
48. Which component of a PC operating system is responsible for managing file storage and organization?
- (A) Device Manager
 - ☒ (B) File Explorer (or Finder in macOS)
 - (C) Command Prompt
 - (D) Kernel

49. Which programming paradigm is commonly used for developing parallel applications for system with multiple processors or cores?
- ☒ (A) Object-Oriented Programming (OOP)
 - (B) Procedural Programming
 - ☒ (C) Parallel Programming -
 - (D) Functional Programming
50. Which widely-used network protocol suite is often employed in Distributed Systems to enable communication and data exchange?
- ☒ (A) HTTP/HTTPS
 - ☒ (B) TCP/IP
 - (C) SNMP
 - (D) POP3/SMTP
51. Which component of a Distributed System is responsible for managing communication between different nodes or computers?
- (A) Compiler
 - (B) Scheduler
 - ☒ (C) Network Operating System (NOS)
 - (D) File System

52. What programming paradigm is commonly used for developing Real-Time Systems?
- (A) Object-Oriented Programming (OOP)
 - (B) Procedural Programming
 - ✓(C) Event-Driven Programming
 - ✓(D) Real-Time Programming
53. Which of the following is a characteristics of a Simple Batch System?
- (A) Supports multiple users simultaneously
 - ✓(B) Processes jobs sequentially without user interaction
 - (C) Has out line Processing only
 - ✓(D) Supports time-sharing for multiple processes
54. What is the goal of multi-level queue scheduling?
- (A) To prioritize processes based on their age
 - ✓(B) To ensure that all processes are treated equally
 - ✓(C) To group processes into different categories and assign priorities to them
 - (D) To minimize the number of context switches
55. In a virtual memory system, what is the purpose of the Memory Management Unit (MMU)?
- ✓(A) It is responsible for storing data in physical memory.
 - ✓(B) It translates logical addresses generated by the CPU into physical addresses.
 - (C) It manages memory allocation for all running processes
 - (D) It provides a graphical user interface for memory management
56. Which memory allocation method typically results in external fragmentation?
- ✓(A) Contiguous Allocation
 - (B) Paging
 - ✓(C) Segmentation
 - (D) Demand Paging
57. Which synchronization mechanism allows a process to wait for a specific condition to become true before proceeding?
- (A) Mutex
 - (B) Semaphore
 - ✓(C) Condition variable
 - (D) Barrier

58. In a multiple-processor system, how are processes typically scheduled?

- ☒ (A) Processes are scheduled based on a single CPU queue
- ☐ (B) Each processor has its own scheduling queue
- ☐ (C) Processes are not scheduled in multiple-processor systems
- ☐ (D) The operating system does not manage scheduling in these systems

59. After detecting a deadlock, what is one way to recover from it?

- ☐ (A) Restart the entire system
- ☐ (B) Terminate all processes
- ☒ (C) Terminate one or more deadlocked processes
- ☐ (D) Remove all resources from memory

60. Which of the following devices would typically be a shared device?

- ☐ (A) Keyboard
- ☒ (B) Printer
- ☐ (C) Monitor
- ☐ (D) All above

61. Disk scheduling algorithms are primarily used to:

- ☒ (A) Improve the data retrieval speed from the disk
- ☐ (B) Manage system security
- ☐ (C) Load programs into RAM
- ☐ (D) Control access to CPU

62. Which of the following is a secondary storage device?

- ☐ (A) RAM
- ☐ (B) CPU
- ☒ (C) Hard Disk
- ☐ (D) Register

63. Swap space management is used to:

- ☐ (A) Control the CPU
- ☒ (B) Manage memory overflow
- ☐ (C) Store active processes
- ☐ (D) Permanently store data

64. Which file access method allows reading or writing data in a sequential order?
- (A) Indexed access
(B) Random access
(C) Sequential access
(D) Direct access
65. In a file system, free space management is used to:
- (A) Keep track of unused space on disk <https://www.rmpssuonline.com>
(B) Allocate files to memory
(C) Delete user data
(D) Schedule files for access
66. In Windows, the Start menu is primarily used to:
- (A) Close applications
(B) Access programs, files, and settings
(C) Display desktop icons
(D) Manage network settings only
67. In Windows, which application would you use to play audio and video files?
- (A) Control Panel
(B) Task Manager
(C) Media Player
(D) File Explorer
68. Which feature in Windows displays a list of installed programs and options for system settings?
- (A) Control Panel
(B) Task Manager
(C) My Computer
(D) Windows Explorer
69. To arrange icons on the Windows desktop, you can:
- (A) Only manually move them
(B) Use the "Sort By" or "Align to Grid" options
(C) Remove all icons
(D) Lock the screen

70. CPU scheduling is the basis of

- (A) multiprogramming operating systems
- (B) larger memory sized systems
- (C) multiprocessor systems
- (D) none of the mentioned

71. Physical memory is broken into fixed-size blocks called

- (A) Pages
- (B) Backing store
- (C) Frames
- (D) Page offset

72. Which Scheduling algorithm allocates the CPU first to the process that request the CPU first?

- (A) First-come, First served scheduling
- (B) Shortest job scheduling
- (C) Priority scheduling
- (D) None of these

73. The Address generated by the CPU is referred to as.....

- (A) Physical Address
- (B) Logical Address
- (C) Virtual Address
- (D) All of these

74. In a file System what is the purpose of a directory?

- (A) To speed up the CPU
- (B) To store system configuration files only
- (C) To organize files into a hierarchy
- (D) To act as a temporary storage area

75. Multitasking in operating system allows for:

- (A) Multiple user to share a single device
- (B) A single user to perform multiple task at one time
- (C) Devices to run without an OS
- (D) None of these