

B.Sc Semester-6 Examination**CC 310****Computer Science****Time : 2-30 Hours]****April-2024****[Max. Marks : 70**

- Q1(A) Explain the role of an operating system in a computer system. Discuss its major functions and how they contribute to the overall functionality of the system. (7)
- Q1(B) Compare and contrast the differences between process and thread in the context of operating systems. Provide examples to illustrate your points. (7)
- OR
- Q1(A) Discuss the significance of memory management in an operating system. Explain various memory management techniques used by modern operating systems, highlighting their advantages and limitations. (7)
- Q1(B) Describe the concept of multitasking in operating systems. Explain how multitasking enhances system efficiency and user experience. Provide examples of multitasking operating systems and discuss their characteristics. (7)
- Q2(A) Define deadlock in the context of operating systems. Discuss the conditions necessary for deadlock occurrence and explain different deadlock prevention and avoidance techniques used by operating systems. (7)
- Q2(B) Explain the concept of file systems in operating systems. Discuss the role of file systems in organizing and managing data on storage devices. Compare different file system types and their suitability for various computing environments. (7)
- OR
- Q2(A) Discuss the role of process scheduling in operating systems. Explain various process scheduling algorithms, such as FCFS, SJF, Round Robin, and Priority Scheduling. Compare these algorithms in terms of their efficiency and suitability for different scenarios. (7)
- Q2(B) Define virtual memory and explain its importance in operating systems. Discuss the benefits and challenges associated with virtual memory implementation. Describe the working principle of demand paging and its impact on system performance. (7)
- Q3(A) Explain the concept of input/output (I/O) management in operating systems. Discuss various I/O devices and their interaction with the operating system. Describe I/O scheduling algorithms used to optimize device utilization and system performance. (7)
- Q3(B) Discuss the concept of kernel in operating systems. Explain the kernel's role in managing hardware resources, providing system services, and enforcing security policies. Describe different types of kernels, such as monolithic and microkernel, and compare their design principles and characteristics. (7)
- OR
- Q3(A) Explain the role of device management in an operating system. How does it contribute to the overall functionality and efficiency of the system? (7)

Q3(B) Discuss the concept of device drivers in operating systems. What are their primary functions, and why are they essential for effective device management? (7)

Q4(A) Describe the difference between polled I/O and interrupt-driven I/O in the context of device management. What are the advantages and disadvantages of each approach? (7)

Q4(B) Define DMA (Direct Memory Access) and explain its significance in device management within an operating system. How does DMA enhance system performance? (7)

OR

Q4(A) Discuss the concept of device contention and its impact on system performance. How can device contention be minimized or mitigated within an operating system? (7)

Q4(B) Explain the concept of interrupt handling in operating systems. What steps are involved in handling interrupts, and how does it facilitate efficient device management? (7)

Q5 MCQ Attempt any seven out of twelve.(2 Marks each) (14)

- 1) Which of the following is not a primary function of an operating system?
A) Process management B) Memory management
C) Disk formatting. D) User interface
- 2) What is the primary function of an operating system?
A) Managing hardware resources
B) Managing software applications
C) Both A and B
D) None of the above
- 3) Which component of the operating system is responsible for managing and controlling the execution of programs?
A) Kernel B) Shell C) File system D) Device drivers
- 4) What is the role of the shell in an operating system?
A) It manages memory allocation.
B) It provides a user interface for interaction with the OS.
C) It controls input and output devices.
D) It manages file systems.
- 5) Which memory management technique involves dividing memory into fixed-size partitions?
A) Paging B) Segmentation C) Fragmentation D) Partitioning
- 6) Which of the following is not a scheduling algorithm used by operating systems?
A) First Come First Serve (FCFS)
B) Round Robin
C) Least Recently Used (LRU)
D) Shortest Job Next (SJN)
- 7) What is the purpose of virtual memory in an operating system?
A) To increase the size of physical memory
B) To provide a secure environment for running applications
C) To allow programs to exceed the size of physical memory
D) To speed up the execution of programs
- 8) Which file system is commonly used in Windows operating systems?
A) NTFS B) Ext4 C) FAT32 D) HFS+
- 9) Which of the following is not a type of user interface provided by operating systems?

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- A) Command-line interface (CLI)
 - B) Graphical user interface (GUI)
 - C) Natural language interface
 - D) Virtual reality interface
- 10) Which of the following is true about process management in an operating system?
- A) Processes do not have their own memory space.
 - B) Processes cannot communicate with each other.
 - C) Processes are independent execution units.
 - D) Processes cannot be terminated by the operating system.
- 11) What is the purpose of the boot loader in an operating system?
- A) To load the kernel into memory
 - B) To initialize hardware devices
 - C) To provide a user interface
 - D) To manage file systems
- 12) What is the role of an interrupt handler in an operating system?
- A) To handle errors during program execution
 - B) To manage communication between processes
 - C) To handle requests from hardware devices
 - D) To control access to system resources

BEST OF LUCK

