

OPERATING SYSTEM IMPORTANT QUESTIONS

PART – A

1. What is the purpose of an open-source operating system?
2. Explain the concept of booting in an operating system
3. Briefly describe the concept of inter-process communication (IPC).
4. What are the advantages of multithreading in operating systems?
5. What are the three key requirements that a solution to the **Critical Section Problem** must satisfy?
6. What is the purpose of system programs in an operating system?
7. What are the different types of system calls in an operating system?
8. What is the difference between a process and a thread in an operating system?
9. Define "context switch" and Name any two **classic synchronization problems** and briefly describe their significance explain why it is important in process management.
10. .

PART – B

1. (a). Describe the different operating system structures and compare their advantages and disadvantages.
(b). (i) Describe the key functions of an operating system and explain their importance.
(ii) What are system calls? Explain different types of system calls with examples.
2. (a). Explain the differences between pre-emptive and non-pre-emptive scheduling. provide examples of scheduling algorithms for both types.
(b). (i) Explain the concept of process in an operating system. How do processes differ from programs, and what are the essential states of a process?
(ii) Explain the concept of multiple processor scheduling.
3. (a). Discuss the **Dining Philosopher's Problem** as a classic synchronization issue.
(b). Differentiate between **Mutex Locks** and **Semaphores**.
4. (a). (i). Discuss the role of the user and operating-system interface in system interaction.
(ii). Describe the key functions of an operating system and explain their importance.
(b). (i). What are the characteristics of open-source operating systems? Give examples.
(ii). Describe the different computing environments where operating systems are used.
5. (a). (i). Explain inter-process communication (IPC) and its importance. Discuss the common methods used for IPC in an operating system.
(ii). Describe the role of a thread library in an operating system. Explain how thread management is achieved through these libraries.
(b). What are the different multithreading models? Compare and contrast the user-level threads and kernel-level threads with their advantages and disadvantages.
6. (a). Explain the **Critical Section Problem** and discuss the three conditions that a solution to this problem must be satisfied.
(b). Explain the role of **Monitors** in process synchronization. How do they help in solving synchronization problems?