 **What is a deadlock?**

* A) A state where a process is waiting for an event that can never happen
* B) A situation where multiple processes are executing in parallel
* C) A method to synchronize processes
* D) A condition where a process terminates unexpectedly

 **Which of the following is NOT a necessary condition for deadlock to occur?**

* A) Mutual exclusion
* B) Hold and wait
* C) Resource preemption
* D) Circular wait

3. **What is the purpose of a semaphore?**

* A) To prevent deadlock in a system
* B) To allow multiple processes to communicate
* C) To control access to a shared resource
* D) To manage memory allocation

4. **In which of the following scenarios would a mutex be preferred over a semaphore?**

* A) When multiple processes need to read data simultaneously
* B) When only one process should have access to a critical section at a time
* C) When signaling between processes is required
* D) When shared resources are abundant



5. **Which of the following algorithms is used for deadlock avoidance?**

* A) Banker's Algorithm
* B) Round Robin
* C) First-Come, First-Served
* D) Shortest Job Next

Q6 **What is a monitor in the context of synchronization?**

* A) A hardware device that manages CPU scheduling
* B) A high-level synchronization construct that combines locking and condition variables
* C) A method to detect deadlocks
* D) A type of semaphore with multiple signals

7. **Which of the following methods can be used for deadlock detection?**

* A) Resource Allocation Graph
* B) Banker's Algorithm
* C) Priority Scheduling
* D) Mutex Locking

 **In condition variables, what is the purpose of the signal operation?**

* A) To release a lock on a resource
* B) To wake up one or more waiting threads
* C) To initialize the condition variable
* D) To terminate a thread

 **Which of the following is true about a mutex?**

* A) It can be used by multiple threads simultaneously
* B) It allows multiple threads to read a resource at the same time
* C) It provides mutual exclusion for critical sections
* D) It cannot be unlocked once locked

 **What is the primary goal of deadlock prevention?**

* A) To eliminate the need for locking
* B) To ensure that at least one of the necessary conditions for deadlock does not hold
* C) To detect and recover from deadlocks when they occur
* D) To improve the performance of resource allocation