Practice Test

Q1. Imagine you are the operating system managing a system with multiple processes. One of the processes, "Process A," is currently running but needs to be suspended because a higher-priority process, "Process B," has arrived. You need to switch to "Process B." Describe how the Process A" helps in managing the context switch to "Process B." What critical information must be stored to resume "Process A" after "Process B" completes its execution?

Q2. Consider the following set of four processes. Their arrival time and time required to complete the execution are given in the following table. All time values are in milliseconds. Consider that time quantum is of 2 ms. Calculate the turnaround around time.

Process	Arrival Time (T0)	Time required for completion
P0	0	10
P1	1	6
P2	3	2
P3	5	4

Q3 Calculate the waiting time using SRTF-

Process	Burst Time	Arrival Time
P1	6 ms	2 ms
P2	2 ms	5 ms
P3	8 ms	1 ms
P4	3 ms	0 ms
P5	4 ms	4 ms

Q4. Imagine a shared library database used by both researchers and librarians. The researchers often access the database to look up information for their studies, while the librarians periodically update the database with new entries or correct existing information.

Researchers can access the database simultaneously without affecting each other's work.

However, when a librarian is updating the database, no one else can access it because the database must be consistent, and incomplete updates could lead to incorrect information being seen by the researchers.

Design a solution for the problem using semaphore.

Q5. What is spinlock? How it is resolved?

Q6. Let us consider a method used by set of two concurrent processes P1 and P2 in a uniprocessor system for accessing some shared resource. Two shared Boolean variable S1 and S2 used by process

P1 and P2 to synchronize their activities and initial value of S1 and S2 is randomly assigned. Methods are:

P1	P2
While(S1==S2);	While(S1!=S2);
Critical Section	Critical Section
S1=S2	S1= not S2

Is the method ensuring synchronization between the process P1 and P2? Justify.