Question Bank

6.1 What is mutual exclusion? Depict a scenario where mutual exclusion is required.
6.2 What is a dead-lock? List the necessary conditions for a deadlock to occur.
6.3 Bring out the difference between Deadlock avoidance and deadlock prevention scheme.
6.4 Explain why having multiple copies of a resource does not prevent deadlocks from happening.
6.5 Define the critical section problem and explain the necessary characteristics of a correct solution.
6.6 With the help of the model of resource management, explain the tasks and goals of the resource manager.
6.7 When does deadlock happen? How does Banker’s algorithm avoid the deadlock condition.
6.8 Explain critical region and mutual exclusion with respect to produce consumer problem.
6.9 What are semaphores? What are binary semaphores?
6.10 When do we need semaphores with structures like a semaphore array? In which applications do we need to use structured semaphores?
6.11 Write the algorithms for wait() and signal() functions. Explain their usage in an example.
6.12 What is semaphore? Describe how semaphore can be used for block wake up synchronization between processes.
6.13 Explain reader/writers problem and protocol.
6.14 Suppose we have two printers connected to a system. For a print job we may allocate any of the two printers. We wish to use semaphores. Describe your design and explain how the scheme shall work. Give a brief sketch of the script that would control printer operation.
6.15 What is dining philosopher problem? Explain monitor solution to dining philosopher problem.
6.16 Suggest one method each to avoid “Hold and wait” and “Circular Wait” condition.
6.17 The Banker’s algorithm is an example of _________________ strategy for overcoming deadlocks.

6.18 What is a live lock? What are the conditions under which it occurs and what are the actions taken to overcome such a condition?

6.19 What is a thread control block? How is it different from the process control block? Mention some (two) of the parameters in TCB.