Operating Systems (CS315)

UNIT-2

**[One Mark Questions]**

1. What is process synchronization?
2. What is race condition?
3. What is the difference between cooperative processes and independent processes?
4. What is mutual exclusion?
5. What is progress?
6. What is bounded waiting?
7. List out the software and hardware type solutions for critical section problem
8. List out the operating system and programming language support type solutions for critical section problem
9. What is critical region?
10. What is semaphore?
11. What is monitors?
12. What is binary semaphore?
13. What is counting semaphore?
14. What are operations performed on semaphore?
15. What is busy waiting?
16. What is spinlock?
17. What is mutex locks?
18. What is preemptive kernels?
19. What is non-preemptive kernels?
20. What is kernel type used by Linux?

**[Two Mark Questions]**

1 What is reader-writer’s problem?

2. What are the requirements that a solution to the critical section problem must satisfy?

3. Define entry section and exit section.

4. What is a semaphore?

5. Define Critical section?

6. What is meant by busy waiting?

7. What are the constraints in Dinning philosopher’s algorithm?

8. What is meant by mutual exclusion?

9. Declare the structure for monitors.

10. Mention the classical problems to synchronization.

**[Five Mark Questions]**

1. Explain the Test and Set instructions for solving critical section problem.
2. What are semaphores? Define binary semaphores and counting semaphores.
3. Write short note on producer consumer problem?
4. Write short note on reader writer problem?
5. Define monitor? What are its characteristics?

**[Ten Mark Questions]**

1. Explain classical problems in process synchronization.

2. Explain in detail on Semaphores.

3. State the dining philosopher’s problem and give a solution for the same, using semaphores. Write the structure of philosopher.

4. Explain the three requirements that a solution for a critical section problem, must satisfy.

5. Write and explain Peterson’s solution for two process synchronization and show that it satisfies all the requirements for critical section problem solution.

6. Explain the problem of critical section using an example.

7. Describe the various instructions used in hardware supported solutions for process synchronization.

8. Give a solution to producer consumer problem using semaphores.

9. What is a critical section? What are the properties that should be satisfied by a solution to a critical section problem? Give a solution to a two process critical section problem without using any operating system or language constructs.

10. Explain monitors solution for critical section problem.