

## **TWO MARKS**

### **1. What is clock synchronization?**

Nodes in distributed system to keep track of current time for various purposes such as calculating the time spent by a process in CPU utilization ,disk I/O etc so that the corresponding user can be charged. Clock synchronization means the time difference between two nodes should be very small.

### **2.Explain the term mutual exclusion**

A program object that blocks multiple users from accessing the same shared variable or data at the same time. With a critical section, a region of code in which multiple processes or threads access the same shared resource, this idea is put to use in concurrent programming.

### **3.What is deadlock?**

A Deadlock is a situation where a set of processes are blocked because each process is holding a resource and waiting for another resource occupied by some other process. When this situation arises, it is known as Deadlock. Deadlock.

### **4.Name the two types of messages used in Ricart-Agrawala's algorithm**

The algorithm uses two types of messages: REQUEST and REPLY. A process sends a REQUEST message to all other processes to request their permission to enter the critical section. A process sends a REPLY message to a process to give its permission to that process.

### **5.What are the conditions for deadlock?**

The four necessary conditions for a deadlock situation are mutual exclusion, no preemption, hold and wait, and circular set. There are four methods of handling deadlocks - deadlock avoidance, deadlock prevention, deadline detection and recovery, and deadlock ignorance.

### **6.Which are the three basic approaches for implementing distributed mutual exclusion?**

Token-based approach.

Non-token-based approach.

Quorum-based approach.



### **7.What are the requirements of mutual exclusion algorithms?**

No Deadlock: Two or more site should not endlessly wait for any message that will never arrive.

No Starvation: Every site who wants to execute critical section should get an opportunity to execute it in finite time.

### **8.What is response time?**

Response time includes the time taken to transmit the inquiry, process it by the computer, and transmit the response back to the terminal.

### **9.What is wait for graph?**

A wait-for graph in computer science is a directed graph used for deadlock detection in operating systems and relational database systems.

### **10.What do you mean by deadlock avoidance?**

Deadlock avoidance is another technique used in operating systems to deal with deadlocks. Unlike deadlock prevention, which aims to eliminate the possibility of deadlocks, deadlock avoidance focuses on dynamically detecting and avoiding situations that could lead to deadlocks.

### **11.Define deadlock detection in distributed system?**

Deadlock detection involves two basic tasks: maintenance of the state graph and search of the state graph for the presence of cycles. Because in distributed systems a cycle may involve several sites, the search for cycles greatly depends on how the system state graph is represented across the system.

### **Part -B**

1.Explain about Ricart Agrawala's Algorithm with an example

2.Analyse suzuki kasami's broadcast algorithm for mutual exclusion in distributed system

3.Discuss with suitable example to show that a deadlock cannot occur if any one of the four conditions is absent

4.Name and explain the different types of deadlock models in distributed system with the commonly used strategies to handle deadlocks with a neat diagram.