Module 3 Pyqs

2024:

Q1	Solve any Four	Marks 20
i)	What is the critical section? What are the minimum requirements that should be satisfied by a solution to critical section problem?	5
ii)	Explain Free Space Management.	5
iii)	Give Peterson solution to the Critical section Problem. Give its limitation.	5
iv)	Differentiate between time sharing and	
	OR	
Q2 A	Explain the problem of Busy Waiting. Give the solution to this problem in Semaphore.	10
	granted immediately?	
iii)	Define the hardware instruction Test And Set() and Swap() also give the mutual exclusion implementation with both.	10

2023:

v)	Define process and various states of the process with the help of diagram.	5
vi)	What are cooperating processes? Give atleast three reasons for Interprocess communication.	5
ii)	Show that, if the wait () and signal () semaphore operations are not executed	5
	atomically, then mutual exclusion may be violated.	
iii)	Explain critical section problem. State Readers-Writers Problem and give its solution using Semaphore.	10

No.		Marks
Q4	Solve any Two	20
i)	Illustrate Inter Process Communication. How to handle it using Shared Memory and Message Passing?	10

	prevent the race condition from occurring.	
iii)	Explain Deadlock Prevention in detail.	10

iv)	Peterson solution to the Critical section Problem	5

2022:

	between monolithic and microkernel	05
Q1 (b)	Define the term Critical section and Race condition.	05

Q3 (a)	Explain the following in brief:(anyone) 1. Semaphores 2. Scheduling in Linux system	10

Q5 (b)	Explain the conditions for deadlock. Suggest techniques to avoid deadlock. OR Explain an algorithm for the producer-consumer problem.	10

2019:

Q.3(a)	List different mechanisms used in process concurrency. Explain reader writer problem (assuming Reader having high priority and single reader single writer) and give the solution using semaphore.	10

Q.3 (b)	Explain how the system can recover from the deadlock using (a) Recovery through preemption. (b) Recovery through rollback. (c) Recovery through killing processes.	10

2018:

Q4 (a)	Explain Producer Consumer problem. and Solve it using any one method.	10

Q4 (b)	Explain deadlock avoidance strategy for system having single instance of all resources and for system having multiple instances of all resources. OR What is inter-process communication? With the help of neat diagrams explain shared memory and message passing techniques.	10

2017:

Q.1	What are the two models of inter-process communication? What are the strength and weaknesses of the two approaches? **OR**	10
Q.3(a)	Two processes P1 and P2 have been designed so that P2 writes a stream of bytes produced by P1. Write a skeleton of procedures executed by P1 and P2 to illustrate how they synchronize with one another using semaphore.	10
Q.3(b)	State and explain different mechanisms that can be used to recover a system from deadlock once it is detected. **OR** Explain why spinlocks are not appropriate for single processor system yet are often used in multiprocessor system.	5 5
Q.3(c)	A system is composed of 4 processes [p1,p2,p3,p4] and 3 types of serially reusable resources [R1,R2,R3]. The number of total existing resources are C=[3,2,2]. 1. Process P1 holds 1 unit of R1 and request 1 unit of R2 2. Process P2 holds 2 units of R2 and requests 1 unit each of R1 and R3 3. Process P3 holds 1 unit of R1 and requests 1 unit of R2 4. Process P4 holds 2 units of R3 and requests 1 unit of R1. Show the reusable resource graph to represent this system state. Can the above required resource request granted in the current state If granted, give the order of process execution. If not granted, which processes are in deadlock state?	10