Attempt any two questions. [ 2\*10=20]

1. What is thrashing? What is the reason for it? Consider the following page reference string: - 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1

How many page faults would occur for the following page replacement algorithms, assuming 3 frames: -

i)FIFO ii) Optimal iii) LRU

1. How do you recover from the deadlock? Consider a disk queue with requests for I/O to blocks on cylinders 98, 183, 41, 122, 14, 124, 65, 67. The FCFS scheduling algorithm is used. The cylinders are numbered from 0 to 199. The head is initially at cylinder number 53 moving towards larger cylinder numbers on its servicing pass. Find total head movement (in number of cylinders) incurred while servicing these requests for following algorithms
2. SSTF
3. SCAN
4. C-LOOK

3) What is CPU scheduling? List the criteria for scheduling. Given the following information

|  |  |  |
| --- | --- | --- |
| Process | Arrival Time | Burst Time |
| P0 | 0 | 7 |
| P1 | 2 | 4 |
| P2 | 4 | 1 |
| P3 | 5 | 4 |

Compute average waiting time and average turnaround time for the following scheduling algorithms

1. Round Robin (quantum = 1)
2. Preemptive SJF
3. FIFO

Attempt any eight questions. [ 8\*5=40]

4) When programmed IO is suitable than other IO handling techniques? Explain the process of IO handling using DMA.

5) Explain the difference between external and internal fragmentation. How do you overcome the fragmentation problem in continuous memory allocation?

6) What is dining philosophers problem? Explain the solution of dining philosophers problem using semaphore.

7) Explain the Linked list method of File allocation. Explain the advantage and disadvantage using File allocation Table with linked list.

8) Explain the necessary condition for deadlock? How do you prevent deadlock?

9) Explain OS as Resource manager. Why do we need dual mode in OS?

10) Why using lock doesn’t ensure mutual exclusion? Explain with suitable example.

11) Why thread is called as light weight process? Compare user level thread with Kernel level thread.

12) Explain segmented paging with suitable diagram.