

1 a) What steps are performed during the fetch phase of the instruction execution? Explain with the help of a diagram?  
 b) Explain the following  
 a) Indirect Addressing  
 b) Judgment Field in demand paging  
 c) Inter Process Communication (IPC)  
 d) Super Block in Unix  
 e) LFU Algorithm for page replacement  
 f) Single contiguous memory allocation scheme

2 A. How an operating system performs the functions of device management? How it is able to perform DMA? Differentiate Between Shared and dedicated device allocation scheme?  
 B. What is Simple Paging Scheme of Memory Management? Explain with the help of diagram?  
 C. Explain Relocatable Variable partition memory scheme? What are its advantages and disadvantages?

3 The page numbers and request sequence of the pages is given in context of demand paging as below:  
 3 1 3 4 2 4 1 2 3 1 2 4 2 3 1 3  
 Main memory has 3 frames, calculate the number of page faults that would occur using the following algorithms. Assume that initially there are no pages in the main memory.  
 a) FIFO  
 b) LRU  
 c) LFU ( to break the tie use FIFO)  
 d) LFU ( to break the tie use LRU)

4  A	Process	Estimated Runtime	Arrival Time
	P1	1.81	0
	P2	6.32	1.39
	P3	7.28	7.11
	P4	3.20	9.99

Use shortest remaining time first algorithm and find the average waiting time.

Process	Estimated Runtime	Arrival Time
P1	12.34	0
P2	10.79	0.79
P3	10.12	21.28
P4	12.91	29.02

Use Round Robin Algorithm to find the average waiting time. The Time slice is of 5.43 Units.

- 5
- A. Find the size of the FAT table required for the following data for DOS OS
- Disk capacity = 64 MB
  - Size of the sector = 256 bytes
  - Number of sectors per cluster = 8
  - Size of Single FAT Entry = 8 bytes
- B How many main Inode pointers will be required for the following data for UNIX OS
- Size of Block = 4KB
  - Size of one address entry = 8 bytes
  - Size of file to be stored = 9 MB
- C How many Total data blocks will be used in the Inode pointer for the following data for UNIX/LINUX OS
- Size of file to be stored = 1 GB
  - Size of Address Entry = 16 bytes
  - Size of Block = 16 KB