**Unit 4 Questions**

1. What is the need of Page replacement? Consider the following reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four free frames which are empty initially. Evaluate which algorithm gives the minimum number of page faults?
2. Explain the Logical versus Physical Address Space.
3. List the advantages and disadvantages of Demand Paging.
4. Consider the reference string: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 for a memory with three frames. Trace FIFO, optimal, and LRU page replacement algorithms to find out how many page faults are produced. Illustrate the LRU page replacement algorithm in detail and also two feasible implementation of the LRU algorithm.
5. What is Demand paging? Explain.
6. Discuss about segmentation with an example.
7. Explain the swapping in memory management.
8. Consider the following page reference string: 1, 2, 3, 4, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6 How many page faults would occur for the FIFO replacement algorithm for 3 frames.
9. Consider the following page reference string 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 with four Frames. How many page faults would occur for the FIFO, Optimal page replacement algorithms? Which algorithm is efficient? (Assume all frame are initially empty)
10. What is thrashing? Explain the Causes of Thrashing.
11. Demonstrate first-fit, best-fit and worst-fit for storage allocation.
12. Describe paging hardware with translation look-aside buffer.
13. Illustrate Least recently used page replacement algorithm with an example.
14. Discuss how LRU and FIFO page replacement algorithms can be implemented on the following reference string when the numbers of frames are 3. Also, calculate the number of page faults. 3, 2, 1, 0, 2, 2, 1, 7, 6, 7, 0, 1, 2, 0, 3, 0, 4, 1, 5, 4, 5, 6, 7, 6, 7, 2, 4, 2, 7, 3.
15. Discuss in detail about various page table structures.
16. What do you meant by thrashing? Suggest solutions to overcome this in virtual memory.
17. In a paged memory, the page hit ratio is 0.35. The time required to access a page in secondary memory is equal to 100nS. The time required to access a page in physical memory is 10nS. What is the average time required to access a page?
18. Discuss the hardware support required to support demand paging.
19. Compare internal and external fragmentation.
20. Explain first, best fit memory allocation techniques.
21. What is virtual memory? Discuss the benefits of virtual memory techniques.
22. What are the disadvantages of single contiguous memory allocation? Explain.
23. Consider the following page reference string 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 Determine how many page faults would occur for Optimal page replacement algorithm. Assume three frames are initially empty.
24. Discuss the procedure for page fault in demand paging.
25. Compare the main memory organization schemes of contiguous memory allocation, pure segmentation and pure paging with respect to the following issues:
    1. External fragmentation.
    2. Internal fragmentation.
    3. Ability to share code across processes.