**Studytonight – OS test 5 – Aditya Jain**

1. **The essential content(s) in each entry of a page table is/are:**
2. Virtual Page Number
3. **Page Frame Number**
4. Both virtual page number and page frame number
5. Access right information
6. **A multilevel page table is preferred in comparison to a single level page table for translating virtual address to physical address because:**
7. It reduces the memory access time to read or write a memory location
8. **It helps to reduce the size of page table needed to implement the virtual address space of a process**
9. It is required by the translation lookaside buffer
10. It helps to reduce the number of page faults in page replacement algorithms.

Soln: the basic objective of multi-level paging is to reduce the page table size overhead.

1. **A system uses FIFO policy for page replacement. It has 4 page frames with no pages loaded to begin with. The system first accesses 100 distinct pages in some order and then accesses the same 100 pages but now in the reverse order. How many page faults will occur?**
2. **196**
3. 192
4. 197
5. 195
6. **Which of the following statements is FALSE?**
7. The amount of virtual memory available is limited by the availability of secondary storage
8. **Any implementation of a critical section requires the use of an indivisible machine-instruction such as test-and-set**
9. The use of monitors ensures that no dead-locks will be caused
10. The LRU page-replacement policy may cause thrashing for some type of programs
11. **A computer system has 6 tape drives, with n processes competing for them. Each process may need 3 tape drives. The maximum value of n for which the system is guaranteed to be deadlock free is?**
12. **2**
13. 3
14. 4
15. 1
16. **Consider a system having m resources of the same type. These resources are shared by 3 processes A,B and C, which have peak demands of 3,4 and 6 respectively. For what value of m deadlock will not occur?**
17. 7
18. 10
19. **13**
20. 15
21. **An operation system contains 3 user processes each requiring 2 units of resource R. The minimum number of units of R such that no deadlocks will ever arise is?**
    * + - 1. 3
          2. **4**
          3. 5
          4. 6
22. **Which of the following is/are advantages of virtual memory?**
23. Faster access to memory on an average
24. Linker can assign addresses independent of where the program will be loaded in physical memory
25. **Programs larger than the physical memory size can be run**
26. Reduces page I/O
27. **If an instruction takes i microseconds and a page fault takes an additional j microseconds, the effective instruction time if on the average a page fault occurs every k instruction is:**
    1. **i + (j/k)**
    2. i + j\*k
    3. (i+j)/k
    4. (i+j)\*k

**Soln: use the formula for eff.Inst. Time =p\*time with page fault + (1-p)\*time without page fault.**

1. **Which of the following devices should get higher priority in assigning interrupts?**
   1. Hard disk
   2. Printer
   3. **Keyboard**
   4. Floppy disk

Soln: whatever is typed should be given to the process or displayed on the screen.

1. **Which of the following is true?**
   1. **Unless enabled, a CPU will not be able to process interrupts**
   2. Loop instructions cannot be interrupted till they complete
   3. A processor does not check for interrupts before executing a new instruction
   4. Only level triggered interrupts are possible on microprocessors.
2. **Using a larger block size in a fixed block size file system leads to** 
   1. **Better disk throughput but poorer disk space utilization**
   2. Better disk throughput and better disk space utilization
   3. Poorer disk throughput but better disk space utilization
   4. Poorer disk throughput and poorer disk space utilization

**Soln:** Larger Block size results in more internal fragmentation and reading a larger block results in reading more data and hence higher throughput.

1. **The data blocks of a very large file in the Unix file system are allocated using**
   * + - 1. Contiguous allocation
         2. Linked allocation
         3. Indexed allocation
         4. **An extension of indexed allocation**
2. **For a magnetic disk with concentric circular tracks, the seek latency is not linearly proportional to the seek distance due to**
   1. Non-uniform distribution of requests
   2. Arm starting and stopping inertia
   3. **Higher capacity of tracks on the periphery of the platter**
   4. Use of unfair arm scheduling policies
3. **Which of the following disk scheduling strategies is likely to give the best throughput?**
   1. Farthest Cylinder next
   2. **Nearest cylinder next**
   3. First come first served
   4. Elevator algorithm

Soln: Nearest cylinder next is also known as shortest seek time first which is the optimal algorithm.