**Studytonight – OS test 6 – Aditya Jain**

1. **On receiving an interrupt from an I/O device the CPU?**
2. Halts for predetermined time
3. Hands over control of address bus a data bus to the interrupting device
4. Branches off to the interrupt service routine immediately
5. **Branches off to the interrupt service routine after completion of the current instruction**

Soln: as per the design of Von Neumann architecture, instruction cycle involves fetch, decode, operand fetch and execute cycles. After completing the execute cycles of the current instruction, the CPU checks for pending interrupts if any, so that it can service it (interrupt cycle).

1. **The root directory of a disk should be placed:**
2. At a fixed address in main memory
3. **At a fixed location on the disk**
4. Anywhere on the disk
5. At a fixed location on the system disk

Soln: to facilitate/ minimize the Disk access time

1. **I/O redirection:**
2. Implies changing the name of a file
3. **Can be employed to use an existing file as input file for a program**
4. Implies connection to programs through a pipe
5. None of the above
6. **When an interrupt occurs, an Operating System:**
7. Ignore the interrupt
8. Always changes state of interrupted process after processing the interrupt
9. **Always resumes execution of interrupted process after processing the ISR.**
10. May change state of interrupted processes to “blocked” and schedule another process.

Soln: interrupted process is always resumed after processing the Interrupt Service Routine (ISR).

1. **Formatting of floppy disk refers to:**
2. Arranging the data on the disk in contiguous fashion
3. Writing the directory
4. Erasing the system area
5. **Writing identification information on all tracks and sectors**
6. **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?**
7. 7
8. 10
9. **13**
10. 15
11. **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
12. **Which of the following is/are advantages of virtual memory?**
13. Faster access to memory on an average
14. Linker can assign addresses independent of where the program will be loaded in physical memory
15. **Programs larger than the physical memory size can be run**
16. Reduces page I/O
17. **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.