**Studytonight – OS test 3 – Aditya Jain**

1. **The total size of address space in a virtual memory system is limited by?**
2. The length of MAR
3. **The available secondary storage**
4. The available main memory
5. All of the above

Soln: Virtual memory is implemented on secondary storage

1. **A “Link Editor” is a program that:**
2. Matches the parameters of the macro definition with locations of the parameters of the macro call
3. **Matches external names of one program with their location in other programs**
4. Matches the parameters of subroutine definition with the location parameters of subroutine call
5. Acts as link between text editor and the user
6. **A simple two-pass assembler does the following in the first pass:**
7. It allocates space for the literal
8. It computes the total length of the program
9. **It builds the symbol table for the symbols and their values**
10. It generates code for all the load and store register instructions
11. **A part of the system software, which under all circumstances must reside in the main memory is:**
12. Test editor
13. Assembler
14. Linker
15. **Loader**

Soln: Loader is a frequently required system software and the basic purpose of using main memory is to provide storage of frequently required system software. Hence, in any circumstances, a Loader must reside in the main memory.

1. **A memory page containing a heavily used variable that was initialized very early and is in constant use is removed when**
2. LRU page replacement algorithm is used
3. **FIFO page replacement algorithm is used**
4. LFU page replacement algorithm is used
5. Optimal page replacement algorithm is used
6. **In a virtual memory system, the address space specified by the address lines of the CPU must be -------- than the physical memory size and -----than the secondary storage size.**
7. Smaller, smaller
8. Smaller, larger
9. **Larger, smaller**
10. Larger, larger

Soln: as per the definition of Virtual Memory

1. **The principle of locality justifies the use of:**
   * + - 1. Interrupts
         2. DMA
         3. Polling
         4. **Cache Memory**
2. **In a paged segmented scheme of memory management, the segment table itself must have a page table because:**
3. **The segment table is often too large to fit in one page**
4. Each segment is spread over number of pages
5. Segment tables point to page table and not to the physical locations of the segment
6. The processor’s description base register points to a page table

Soln: segment table must be paged in order to be accommodated in one page.

1. **Which of the following page replacement algorithms suffers from Belady’s Anomaly?**
   1. Optimal replacement
   2. LRU
   3. **FIFO**
   4. LFU
2. **A linker is given object modules for a set of programs that were compiled separately. What information need not be included in an object module?**
   1. Object code
   2. Relocation bits
   3. Names and locations of all external symbols defined in the object module
   4. **Absolute addresses of internal symbols**

**Soln: absolute addresses are assigned only by the loader**

1. **The capacity of memory units is defined by the number of works multiplied by the number of bits/work. How many separate address and data lines are needed for a memory of 4K X 16?**
   1. 10 address, 16 data lines
   2. 11 address, 8 data lines
   3. **12 address, 16 data lines**
   4. 12 address, 12 data lines

Soln: Memory specification = No. of works x width of word.

1. **A ROM is used to store the table for multiplication of two 8-bit unsigned integers. The size of ROM required is?**
   * + - 1. 256 k x 16
         2. 64 k x 8
         3. 4 k x 16
         4. **64 k x 16**
2. **A 1000 kbyte memory is managed using variable partitions but to compaction. It currently has two partitions of sizes 200 kbytes and 260 kbytes respectively. The smallest location request in kbytes that could be denied is for?**
   * + - 1. 151
         2. 181
         3. 231
         4. **541**

**Soln: remaining all are satisfiable in one or the other partition, but 541 is never satisfiable.**

1. **Thrashing** 
   1. Reduces page I/O
   2. Decreases degree of multiprogramming
   3. **Implies excessive page I/O**
   4. Improve the system performance
2. **Dirty bit for a page in a page table**
   1. **Helps avoid unnecessary writes on paging device**
   2. Helps maintain LRU information
   3. Allows only read on a page
   4. Allows read and write on a page