Class Test – II **Name: _____**

MCA 2nd Year 2nd Semester **Class Roll: _____**

Session: 2017-18

Date: 27/11/2017 **Marks Obtained: _____**

Full Marks: 30

Time: 50 minutes

Write proper justifications for all your answers

1. In a system, the page size is 16. A process generates the following sequence of virtual addresses: 12, 24, 38, 20, 54, 36, 44, 12, 68, 72, 80, 84, 28, 32, 88, 92. Determine the page numbers corresponding to this virtual addresses.
   Also Determine the number of page faults for the following two cases:
   (i) Page replacement policy is LRU, number of frames allocated to a process is d%2+3.
   (ii) Page replacement policy is OPTIMAL, number of frames allocated to a process is d%2+3.

   Where, d is last digit of your class roll number

2. In a system inverted page table is used. Each entry of the inverted page table stores pid of the process and the page number. Logical address is 32 bit, physical memory size is 16 GB and page size is 4 KB. Process pid is represented by 12 bit. Determine size of the inverted page table.

3. Consider a paging system with 40 bit logical address and 36 bit physical address. Size of each page table entry is 4 bytes. Assume that you want to implement a multi level page table. Determine how many levels of page table is required if you need to store each page of the page table possibly in non contiguous frames. Compare the size of single level and multi level page table considering two cases where page sizes is 4 KB. Also, determine the division of bits of the logical address that is required to address each levels of the multi level page table.

   If memory access time is 2 ns, determine the time involved in a paged memory reference. How does this time improve, if a TLB with access time 1 ns is introduced?

4. Suppose the following disk request sequence (track numbers) for a disk with 100 tracks is given: 45, 20, 90, 10, 50, 60, 80, 25, 70. Assume that the initial position of the R/W head is on track 40. Determine the distance (in terms of number of tracks) that will be traversed by the R/W head if the disk scheduling algorithm is (i) Shortest Seek Time First (SSTF) (ii) C-SCAN. Assume that the head was moving towards track number 99.

5. A disk has 24 surfaces, 256 tracks per surface and 512 sectors per track. Sector size is 512 bytes. Determine the number of cylinders, size of each cylinder and size of disk.

8+6+8+6+2=30