**CSI 309 (Class Test 2)**

***Marks: 20 Time: 40 minutes***

1. A virtual memory is addressed using 22 bits and the corresponding physical memory is addressed with 16 bits. The virtual memory stores 256 pages. Find out the following: [3+2+2+2=9]

(i) How many entries are there in the page table and how many page frames are there in the physical memory?

(ii) What is the size of the physical and virtual memory?

(iii) How many offset bits are there in the physical address and the virtual address?

(iv) How many bits are required to refer to the physical page frames and the virtual pages?

1. Assume, there are currently three pages, A, B and C in the physical memory. The reference bits for these pages in the last four clock ticks are found as follows: [7]

Page A: 0, 1, 0, 1

Page B: 1, 0, 1, 0

Page C: 0, 0, 1, 1

Now if a page fault occurs for a new page D, which page will be replaced according to “**Aging**”? Show how the algorithm decides on this step by step.

1. What is the main advantage of “Second Chance Page Replacement Algorithm” over “FIFO”? Write down the main disadvantage of NFU. [2]
2. If the pages are named 0, 1, 2 & 3 then determine the sequence of references of these pages using the following implementation of LRU: [2]

1 2 0 3

