

UNIVERSITY OF HYDERABAD
DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES

OPERATING SYSTEMS – MINOR 2 (TAKE-HOME EXAM)

Date:4.4.2016

Max. Marks: 20

1. Answer the following: **(5 Marks)**
 - a) What are the advantages and disadvantages of an inverted page table?
 - b) Give the method of translating a virtual address to the physical address using the regular page table and an inverted page table.

2. Answer the following: **(5 Marks)**
 - a) The size of the Translation Look-aside Buffer (TLB) is 512KB. If the entire page table has to fit into the TLB for a 32-bit processor, what is the minimum size of the page?
 - b) What are the various forms of protection that are required for the address space of a process? How are these achieved in paging?

3. Given the following page reference string, how many more page faults are encountered using FIFO and LRU as compared to the optimal replacement algorithm? **(5 Marks)**

1 1 2 2 3 4 6 5 3 2 1 4 5 6 5 3 5 2 2 3

4. Answer the following: **(5 Marks)**
 - a) Explain how reducing degree of multiprogramming reduces thrashing?
 - b) Let us assume that when a process, $P1$, began running and generating page faults, only 4 frames were free and these were allocated to the process. The working set of $P1$ is 5 pages and some of the processes have more than the working set allocated to them. What can we say about the turnaround time of process $P1$, if the OS uses local replacement strategy versus global replacement strategy?