This question paper contains 3 printed pages.]

Your Roll No. .....

1738 **A**

MCA / IV Sem.

MCA - 405 Advanced Operating System

(Admissions of 2007 & onwards)

Time : 2 *Hours* *Maximum Marks* : 50

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt ***all*** *questions.*

1. (a) What is a system call? What is the need of a system call? 3

   (b) Describe the term user mode and Kernel mode. 2

   (c) Kernel is sometimes said to be non - preemptive. Comment. 2

   (d) How does Kernel implement a lock when there is a process executing in Kernel mode? How unlocking is done? 3

2. (a) Explain the various data structures available for processes in main memory. Why is a region table required when every process has its per process region table? 5

   (b) Consider the following sequence of commands grep main a - c b . c c - c > grepout & wc-l grepout & rm grepout & why is this

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not equivalent to the following command line?

grep main a - c b . c c - c | wc - *l* 3

(c) Is shell the part of a user program or part of a Kernel? 1

3. (a) Can an In core inode in free list have non-zero link count? Justify your answer. 2

(b) If the time between read () calls is small, chances are good that block will be in buffer cache. Why? 2

(c) In the algorithm getbek, if Kernel removes a buffer from the free list, it must raise the processor priority level to block out interrupts before checking the free list. Why? 3

(d) How is a regular file different from a named pipe? 3

4. (a) What is the special processing required in "iget" and "namei" algorithms when mount points are to be crossed? 3

(b) List and briefly explain situations under which the process communicating using pipes can be put to sleep by the Kernel.4

(c) Why inode is blocked during write () system call? 2

(d) Why it is advantageous for IlO request to start on file system block boundaries and to be multiples of block size? 2

5. (a) What is a Zombie process? 2

(b) Draw process state transition diagram and list four situations when scheduling decision is made. 3

(c) What are the three components if the process context? Describe each of the component briefly. 5