Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

FIFTH SEMESTER B.E. (COMPUTER) DEGREE EXAMINATION – NOV/DEC 2006

SUBJECT: OPERATING SYSTEMS AND UNIX (CSE 305)

(CREDIT SYSTEM)

Monday, December 04, 2006

Time: 3 Hours Max. Marks: 100

✍ **Answer any FIVE full questions.**

1A. Explain the concept of Multiprogramming.

1B. What is Spooling? What is it's advantages over buffering?

1C. What are different states that process can be in? Explain with the diagram.

1D. Write a note on contents of process control Block.

(5×4 = 20 marks)

2A. Outline the solution for Dining philosopher's problem using semaphores.

2B. Explain the different criteria used for comparing CPU scheduling algorithms.

2C. Consider the following set of processes with the length of the CPU-burst time and priority. The processes are assumed to have arrived with order P_1, P_2, P_3, P_4, P_5 at time t=0.

Process	Burst-time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

i) Draw Gantt charts illustrating the execution of these processes using FCFS, SJF and a non preemptive priority scheduling algorithm.

ii) What is Turn Around Time (TAT) of each process for each of the scheduling algorithms.

(5+5+10 = 20 marks)

3A. Explain the Banker's algorithm for dead lock avoidance with the help of pseudo code.

3B. With the help of a block diagram explain the address translation scheme for a paged segmentation system.

3C. What is meant by external fragmentation? Specify the solutions to deal with external fragmentation.

(10+5+5 = 20 marks)

4A. Consider the following page reference strings: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7 How many page faults would occur for the following page replacement algorithms assuming 4 frames:

i) LRU ii) Optimal page replacement

4B. List out various steps involved in handling a page fault.

4C. What is Thrashing? Explain the cause for thrashing in Virtual memory systems.

(8+6+6 = 20 marks)

5A. What are different methods of accessing files? Explain.

5B. Explain the following directory structures and mention the advantages and disadvantages.

i) Two-level ii) Tree-structured

5C. Write a note on program Threats and system Threats.

(6+6+8 = 20 marks)

6A. Suppose that a disk drive has 200 cylinders, numbered 0 to 199. Disk head is initially at cylinder 53. The disk Queue has the following request for I/O to blocks on cylinders: 98, 183, 37, 122, 14, 124, 65, 67. Indicate the total head movement using the following disk scheduling algorithms:

i) FCFS ii) C-SCAN iii) SSTF

6B. What is Access Matrix? Discuss about the implementation of Access matrix.

6C. Describe the concept of language based protection.

(9+7+4 = 20 marks)

7. Write a note on following:

7A. UNIX file systems.

7B. Inter process communication in UNIX.

7C. Process management in UNIX.

(8+6+6 = 20 marks)