01280

Printed Pages – 4 **MCA – 303**

(Following Paper ID and Roll No. to be filled in your Answer Book)										
PAPER ID : 1431	**Roll No.**									

MCA

THIRD SEMESTER EXAMINATION, 2005-2006

OPERATING SYSTEM

Time : 3 Hours *Total Marks : 100*

Note : *(i) Attempt **ALL** questions.*

(ii) All questions carry equal marks.

(iii) Be precise in your answer.

1. Attempt ***any four*** of the following questions : **(5x4=20)**

(a) Discuss the various functions performed by an operating system ?

(b) What is advantage of multiprogramming ? Discuss the factors which influence the degree of multiprogramming.

(c) Why are distributed system desirable ?

(d) What do you understand by system call ?

(e) Differentiate between real time systems and time sharing system

(f) Explain the concept of Vistual Machine.

2. Attempt *any four* of the following questions : **(5x4=20)**

(a) Explain the concept of process. Also describe process control block

(b) How the inter-process communication is performed using mailbox.

(c) Defferentiate clearly between process and thread.

(d) Describe the performance criteria used to evaluate CPU scheduling algorithm.

(e) Consider the following four processes with the length of the CPU- burst time given in milliseconds

Process	Arrival time	Burst time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

What is the average waiting and turnaround time for those processes with preemptive SJF scheduling.

(f) What advantage is there in having different time-quantum sizes on different levels of a multilevel queueing system

3. Attempt *any two* of the following questions : **(10x2=20)**

(a) An OS contains 3 resource classes. The number of resource units in these classes is 7,7,10 respectively. The current resource allocation state is shown below.

	Allocated Resources			Maximum Requirement		
	R_1	R_2	R_3	R_1	R_2	R_3
Process P_1	2	2	3	3	6	8
Process P_2	2	0	3	4	3	3
Process P_3	1	2	4	3	4	4

(i) Is the current allocation state safe ?

(ii) Would the following requests be granted in current state

(a) Process P_1 requests (1,1,0)

(b) Process P_2 requests (0,1,0)

(c) Process P_3 requests (0,1,0)

(b) What do you understand by semaphore ? State the Producers/consumbers problem. Discuss how semaphore can be used to solve it.

(c) (i) What are the conditions necessary for the deadlock to occur.

(ii) Explain monitors with suitable example.

4. Attempt *any two* of the following questions : **(10x2=20)**

(a) Differentiate between external and internal fragmentation. How does the paging scheme solve fragmentation problem. Also discuss page Table structure and effective access time

(b) Discuss the scheme "segmentation with paging" How this scheme works. Also discuss the address translation scheme.

(c) What is demand paging ? Discuss its effect on performance. Also derive the formula for the effective access time in a system using demand paging.

5. Attempt *any two* of the following questions : **(10x2=20)**

(a) How the protection can be viewed as access matrix ? How the access matrix implementation is done effectively ?

(b) (i) What are the security issues related to operating systems ?

(ii) How the process management is performed in the Linux OS ?

(c) (i) Discuss the advantages and disadvantages of the page table structure in NT.

(ii) Compare the Linux file system with Windows NT file system.

-oOo-