Code No: 09A50507 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B. Tech III Year I Semester Examinations, November/December-2013
OPERATING SYSTEMS
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

1.a) What is a system call? Explain different types of system calls used in developing the programs.
b) Explain briefly about special purpose systems? [8+7]

2.a) What is SRTF Scheduling algorithm? Explain with a neat Grant Chart.
b) Consider the following four processes, with the length of the CPU burst given in milliseconds.

Process	AT	BT
P1	0	5
P2	1	6
P3	2	2
P4	3	8

Calculate the average waiting time for
i) Non preemptive SJF scheduling
ii) Average Turnaround time. [7+8]

3.a) State and Explain critical section problem.
b) What is a monitor? How are monitors used in solving the Dining Philosophers problem? [7+8]

4.a) Compare paging concept in Linux, Unix and windows operating systems?
b) Consider the following reference string: **7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1**. Assume there are three frames which are initially empty. Using LRU page replacement algorithm determines the number of page faults for the reference string above. Provide necessary diagram for page frames. [7+8]

5.a) Explain Banker's safety algorithm for Deadlock avoidance.
b) Consider that in a system there are five processes p0 to p4 and three resource types A, B, C .Resource type A has 7 instances, B has 2 instances, C has 6 instances. At time t0, consider the following snapshot of a system:

	Allocation	*Request*	*Available*
	A B C	*A B C*	*A B C*
P_0	0 1 0	0 0 0	0 0 0
P_1	2 0 0	2 0 2	
P_2	3 0 3	0 0 0	
P_3	2 1 1	1 0 0	
P_4	0 0 2	0 0 2	

Is the system in a deadlocked state? Justify and show the necessary steps. [7+8]

6.a) Explain linked and indexed file allocation methods.
b) Explain different directory structures with neat diagram. [7+8]

7.a) Write a short notes on tertiary storage memory.
b) Explain about SCAN Disk scheduling algorithm.
Consider a disk queue with requests for I/O to blocks on cylinders
98, 183, 37,122,14,124,65,67 in that order. Assume the disk head is initially at cylinder 53. Show diagrammatically the SCAN disk scheduling
Find out the total head movements for SCAN algorithm. [8+7]

8.a) Explain the three Implementation methods of access matrix.
b) Write about the following
i) Anti virus Approaches.
ii) Types of Viruses.
iii) Nature of viruses. [7+8]

****