THE LNM INSTITUTE OF INFORMATION TECHNOLOGY, JAIPUR

MIDTERM EXAM II- OPERATING SYSTEMS (2013-2014)

Time: 1 Hr. Max. Marks: 30

Name:_____ Roll No. _____

Signature:_____ Date: _____

1. Fill in the blanks: (7)

a. To avoid the race condition, the number of processes that may be simultaneously inside their critical section is_____.

b. _____helps in increasing the priority of a process.

c. _____scheduling algorithm is used in time-sharing systems.

d. DOS stands for _____.

e. A process in the CPU is in the _____state.

f. A thread is a _____ process.

g. Deadlocks can be described more precisely in terms of a directed graph called _____ graph.

2. Define: (3*1=3)

a) Cascading termination

b) Safe state

c) Dispatch latency

3. Mention the four necessary conditions required for the occurrence of the deadlock. (2)

4. What are the benefits of multithreaded programming? (2)

5. What is a spin lock? What is its disadvantage? What is an alternative to spin locking? (3)

6. What is a time slice? What effect does a very small time slice have? What effect does a very large time slice have? (3)

7. Assume that there are 5 processes, P0 through P4, and 4 types of resources. At T0 we have the following system state: (1+3+3=7)

	Allocation	**Max**	**Available**
	A B C D	**A B C D**	**A B C D**
P0	0 1 1 0	0 2 1 0	1 5 2 0
P1	1 2 3 1	1 6 5 2	
P2	1 3 6 5	2 3 6 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

a) Create the need matrix.

b) Use the safety algorithm to test if the system is in a safe state.

c) If the system is in a safe state, can the request {P1 requests (2,1,1,0)} be granted. Why or why not?

8. Bank XYZ has 500 user accounts. Write a pseudocode to ensure safe transfer of Re. 1/- from one account to another. Remember that two or more users may access their accounts at the same time. (3)