Class Test – I

Name: _____

MCA 2nd Year 2nd Semester

Class Roll: _____

Session: 2014-15

Date: 02/03/2015

Marks Obtained: _____

Full Marks: 30

Time: 50 minutes

<u>Write proper justifications for all your answers</u>

1. P_1, P_2 and P_3 are three processes executing their respective tasks. They should synchronize among themselves using semaphores such that the string "India is great" gets printed infinite times. Determine, minimum number of semaphores required and their initial values. Also identify places where operations on those semaphore should be inserted in the code of P_1, P_2 and P_3.

P₁
while(true){
      print("India");
}
	P₂
	while(true){
	      print(" is");
	}
		P₃
		while(true){
		      print(" great\n");
		}

2. Consider the following set of processes with the arrival times and the CPU burst times given in milliseconds

Process	Arrival Time	Burst Time
P_1	0	5
P_2	1	3
P_3	2	3
P_4	4	1

Determine the turnaround time and waiting time for all the processes using Shortest Remaining Time First (SRTF) and Longest Remaining Time First (LRTF) scheduling policy. In both the cases ties are broken by giving priority to the process with lowest id.

3. A system has five processes and four allocable resource types. The current allocation and maximum requirements for each process are as follows:

Process	Allocation	Maximum	Available
P_1	0 0 1 2	0 0 1 2	1 5 2 0
P_2	1 0 0 0	1 7 5 0	
P_3	1 3 5 4	2 3 5 6	
P_4	0 6 3 2	0 6 5 2	
P_5	0 0 1 4	0 6 5 6	

Is the system in a safe state? If a request from process P_1 arrives for (0, 4, 2, 0) can the request be granted immediately.

4. What is a "spin lock"? How can it be implemented by using TestAndSet instruction?

6+8+12+4=30