Roll Number:

B.E 2nd Yr. 1st Semester CSE **UCS303: Operating System**
MST, 21 September 2011 **Maximum Marks: 25**
Time: 2 hrs *Name of Faculty: Vinay Arora, Ashish Aggarwal*

Note: All Questions are Compulsory.
Attempt ALL the questions in a SEQUENTIAL ORDER.

SECTION (A)

Q.1. a). Give the difference between Long Term Scheduler & Short Term Scheduler. (1)
b). Differentiate between User Level Thread & Kernel Level Thread. (1)
c). Why a Thread is called as Light Weight Process? (1)
d). Discriminate between Turnaround Time & Waiting Time. (1)

Q.2 Increase in the degree/frequency of multitasking can be considered as an overhead for operating system. (2)
Explain with diagram.

Q.3 System call provide the means for a user program to ask the operating system to perform tasks reserved (2)
for the operating system on the user program's behalf. Explain using diagram the transition from user to
kernel mode & vice versa while executing the system call.

Q.4 Existence of a directed circular path in a RAG doesn't always state for the happening of a deadlock. (2)
Explain with an example & diagram.

Q.5 a). Explain the layered Architecture of VMware with diagram. (2)
b). How client-server model of distributed systems is different from peer-to-peer model? (Diagram (2)
Required)

SECTION (B)

Q.6 While discussing Multiprogramming & Multitasking in class lecture, one among the students asked that, (3)
can we consider Multitasking as an extension of multiprogramming? By providing diagrammatic
representation explain the answer for above query.

Q.7 Consider the following table showing arrival & cpu burst time (Assume **Preemptive** Scheduling
protocol for **part a** and **Non-Preemptive** Scheduling protocol for **part b**):

Process	Arrival Time	Burst Time
P1	0.0	9
P2	0.5	4
P3	1.0	2
P4	2.0	7

a). Give the Gantt Chart & Calculate average turnaround time using SJF scheduling. (2)
b). Draw the Gantt Chart & find average turnaround time if the CPU is left idle for the 1st unit and (2)
then SJF scheduling is used. (Remember that processes P1 and P2 are waiting during this idle
time, so their waiting time may increase.)

Q.8 Consider the set of processes where processes are arrived in the order P1, P2, P3, P4 all at time t_0.

Process	Burst Time (milliseconds)	Priority
P1	20	2
P2	2	1
P3	4	2
P4	2	3

a. Find the total number of **context switches** present in Non Preemptive Priority & RR (2)
scheduling (Time Slice=2). Diagram Required.
b. When the behavior of RR scheduling become equivalent to FCFS. Explain. In above (1)
mentioned case find out the time quantum when RR & FCFS will be equivalent.
c. Draw Gantt charts to illustrate the execution of processes using a non Pre-emptive priority (a (1)
smaller priority number implies a higher priority), and RR (Time Slice=2) scheduling.