Roll Number:

***Thapar University Patiala***

Computer Science & Engineering Department

***B.E 2nd Yr. 2nd Semester CSE*** **CS006: Operating System**

***MST, 10 March 2010***

Time: 2 hrs Name of Faculty: Shalini Batra, Vinay Arora

**Note:** All Questions are Compulsory.

Attempt ALL the questions in a **SEQUENTIAL ORDER**.

Q.1 Consider the following table (Assume Non Preemptive scheduling):

| Process | Arrival Time | Burst Time |
|---|---|---|
| P1 | 0.0 | 8 |
| P2 | 0.4 | 4 |
| P3 | 1.0 | 1 |

a. Give the Gantt Chart & Calculate average turnaround time using

i) FCFS scheduling
ii) SJF scheduling (1+1)

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

(1)

Q.2 Consider the following segment table:

| Segment | Base | Length |
|---|---|---|
| 0 | 219 | 600 |
| 1 | 2300 | 14 |
| 2 | 90 | 100 |
| 3 | 1327 | 580 |
| 4 | 1952 | 96 |

What will be the physical addresses for the following logical addresses?

i. 0,430
ii. 1,10
iii. 2,500
iv. 3,400
v. 4,112 (2)

P.T.O.

Q3. (a) Consider a computer system with a 32-bit logical address and 4 KB page size. The system supports up to 512 MB of physical memory. How many entries are there in:

i) A conventional single-level page table
ii) An inverted page table (2)

(b) Differentiate between

i) Page & Page of Page Table
ii) Logical & Physical Address Space
iii) Contiguous & Non Contiguous Memory Allocation (6)

(c) What is Roll Out? (1)

Q.4 (a) Consider five free memory partitions of 100 KB, 500 KB, 200 KB, 300 KB and 600 KB (In Order). Assume that the four processes P0, P1, P2 and P3 come in following order: 212KB, 417KB, 112 KB and 426 KB. What memory allocation sequence will be followed if operating system goes for:

i) First-fit
ii) Best-fit
iii) Worst-fit (3)

(b) Write Short notes on:

i) 1:N and N:M Threading Model
ii) Multiprogramming & Multitasking (3)

Q.5 (a) Diagrammatically represent various Page Table Implementation Techniques. (3)

(b) A programmer says “Convey Effect & Starvation” are same. Comment. (1.5)

(c) What is the role of dispatcher? (.5)