**Quiz OS Lab (Alpha + Omega)**

**Submitted Time: 2: 30**

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**Total Marks: 50**

**Hand Written (Take a Screen Shot)**

**Q1:** A single processor system has three resource types X, Y and Z, which are shared by three processes. There are 5 units of each resource type. Consider the following scenario, where the column ***allocation*** denotes the number of units of each resource type allocated to each process, and the column ***request*** denotes the number of units of each resource type requested by a process in order to complete execution. The system is in safe state? Which of these processes will finish LAST? (10)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | |  | ***Allocation*** | ***Request*** | |  | X Y Z | X Y Z | | P0 | 1 1 1 | 1 0 1 | | P1 | 3 0 1 | 0 1 1 | | P2 | 3 1 1 | 1 1 0 | |

**Q2:** For the following set of processes, find the average waiting time & average turnaround time using Gantt chart for (10)

I > FCS

II> SJF preemptive.

III> SJF non-preemptive.

**Process** **Arrival time (in sec)** **Burst Time (in sec)**

P1 0 4

P2 1 2

P3 2 5

P4 3 4

**Q3:** Consider the following set of resources with the len of CPU burst in milliseconds. (15)

Process PI P2 P3 P4 P5

Arrival time 00 02 03 06 30

Burst time 10 12 14 16 05

Draw a Gantt chart that illustrates the execution of these processes using the preemptive shortest job first (SJF) algorithm. Hence find the average waiting time.

Draw a Gantt chart that illustrate the execution of these processes using preemptive priority scheduling algorithm. Given priority of each process is **PI = 4, P2=3, P3=5, P4= 1 and P5= 1**. (Lower number has highest priority). Also find the average waiting time.

**Q4**: **Consider the following snapshot- (15)**

Allocated Max Available

A B C D A B C D A B C D

P0 1 2 1 2 1 0 1 2 2 3 2 1

P1 1 1 0 1 1 7 5 0

P2 1 4 5 4 2 3 5 6

P3 1 4 3 2 0 4 5 2

P4 1 0 1 4 0 6 5 6

**Answer the following questions using banker’s algorithm:**

a) What are contents of matrix end?

b) Is the system in safe state?

c) If request for process p1 arrives for (0, 3, 1, 1) .Can the request be granted immediately?