**2.6. A computer has 4 GB of RAM of which the operating system occupies 512 MB. The**

**processes are all 256 MB (for simplicity) and have the same characteristics. If the goal**

**is 99% CPU utilization, what is the maximum I/O wait that can be tolerated?**

There are 4 GB (4096 MB) of RAM. 4096 – 512 = 3584 MB remaining

3584/256 = 14

There are 14 processes running.

CPU Utilization = 1- pn (n=14)

1-p14 = 0.99

1-0.99 = p14

0.01=p14

14√0.01=14√p14

P=0.7187= **72%**

**2.7. Multiple jobs can run in parallel and finish faster than if they had run sequentially.**

**Suppose that two jobs, each needing 20 minutes of CPU time, start simultaneously.**

**How long will the last one take to complete if they run sequentially? How long if they**

**run in parallel? Assume 50% I/O wait.**

**Sequential**

CPU Time = 20 minutes

Time to complete both jobs = 20x2=40

Sequential = 80 minutes

**Parallel**

1- pn (p=50%,n=2)

1-0.52 = 0.75

0.75/2 = 0.375

20 mins/ 0.375 CPU Utilization = 53.33 mins