**1. Multiple Queues** A process on a system with Multiple Queues Scheduling needs 30 quanta to complete. How many times must it be swapped in, including the very first time (before it has run at all)?

**5 swaps needed (1+2+4+8+15)**

**2. Shortest Process Next** A scheduler working with the {\em Shortest Process Next} Strategy has two processes in ready state and has to schedule one of these:

50/8 + 150/8 + 300/4 + 85/2 = 142.5

300/8+ 150/8 +85/4 +50/2 = 102.5

The second process will be taken by the scheduler, because it has a lesser average runtime.

**3)**  **CPU-bound and I/O-bound Processes**

* Explain in a few words the terms **CPU-bound** and **I/O-bound** processes.
* Why is it important for the scheduler to **distinguish** between CPU-bound and I/O-bound processes?

1. I/O bound: (high user interaction) need small quanta, but does not have to do much.
2. CPU-bound: no user interaction / no IO, they have to work much.
3. Because the CPU-bound need more quanta because they have to work more, that’s why it is import to distinguish which process it takes.

**4) Real Time Schedulable** A soft real-time system has four periodic events with periods of 50, 100, 200, and 250 msec each. Suppose that the four events require 35, 20, 10 and $x$ msec of CPUtime, respectively. What is the largest value of $x$ for which the system is schedulable?

35/50 + 20/100 + 10/200 + x/250 = 1

x= 12,5