Computer Operating Systems

Problem #1

Explain what process CPU burst and what is CPU-I/O burst
cycle. Describe the basic scheduling disciplines: Shortest Job First
(SJF), Shortest Remaining Time (SRT), Round-Robin (RR), First Come
First Served (FCFS).

Assume the processes become runnable as follows:

	Arrival time, ms	Burst time, ms
P1	0	10
P2	1	5
P3	3	3

Assume the time slice for RR is 1 ms. Drawn Gantt charts of scheduling
the processes by the four scheduling disciplines. Explain your answer.

Problem #2

Briefly explain page-based virtual memory organization. Introduce
the concept of page replacement algorithm and explain why it is
necessary. Define thrashing and explain it with respect to page
replacement. Explain the concept of working set and how keeping
track of it may prevent or mitigate thrashing.

Problem #3

Explain why operating system schedules disk read-write head movement.
Consider a 1000-cylinder disk and the following queue of requests:

40, 180, 400, 900, 950

Assume that the read-write head is presently at the cylinder number
500 going from inner (lower numbered) to outer (higher numbered)
cylinders. Describe shortest-seek-time-first (SSTF), LOOK, and
C-LOOK would schedule the read-write head movement. Explain your
answer. Out of these three scheduling algorithms, which one would
most likely be implemented in practice? Explain.