

Università degli studi “Roma Tre”

A.Y: 2022/2023

Teaching: Sistemi Operativi

Course: Ingegneria Informatica

Exam session: 05/07/2023 – Written test

Maximum score: 21 points

STUDENT ID _____ Last Name _____ First Name _____

It is recommended that you write your surname and name on this sheet and use it as a folder to contain the answer sheets. If you consider a question ambiguous, write down your interpretation and respond accordingly.

Question 1 (6 points)

In the context of virtual memory, what is a page fault? Describe a possible management scheme.

Question 2 (6 points).

Describe the SCAN disk scheduling policy and explain its advantages and limitations. For the described limitations, provide possible solutions.

Question 3 (9 points).

Consider a scenario with 10 processes $\{P_1, \dots, P_{10}\}$ generated sequentially from P_1 to P_{10} with negligible delays. P_{10} is a CPU-bound process and requires 500 milliseconds of CPU time to complete. Processes from P_1 to P_9 are I/O-bound processes and require 1ms to enqueue an I/O operation. The completion time of an I/O operation is 9ms.

Assuming negligible context-switch delay and a time slice of 50ms, calculate the first CPU-access time for each P_i using the Round Robin and Shortest-Next CPU Burst algorithms, as well as the completion time for process P_{10} .

The publication of the result via Web will take place anonymously using the serial number. To have your exam grade published on the course website, you must sign the following authorization.

The undersigned, pursuant to law 675 of 31/12/96, authorizes the lecturer to publish the results of the exam on the bulletin board and / or on the Web. In faith

Legible signature: _____