



Politecnico di Milano

Dipartimento di Elettronica, Informazione e Bioingegneria

prof. Fabrizio Ferrandi

Advanced Algorithms and Parallel Programming 1st part (Advanced Algorithms)–June 9th 2022

Polimi ID _____

Surname _____ **Name** _____

- This is a closed-book examination. You cannot use computers, phones or laptops during the exam.
- Paper will be provided, but you should bring and use writing instruments that yield marks dark enough to be read easily. Erasable pens can be used.
- Total available time: 1h:00m.

Exercise 1 (6 points) _____

Exercise 2 (5 points) _____

Exercise 3 (5 points) _____

Exercise n. 1

Explain the difference between Monte Carlo (MC) and Las Vegas (LV) randomized-based algorithms. Describe an example of both. How should complexity be addressed in the case of MC or LV?

Exercise n. 2

Discuss an example of dynamic programming based algorithm. Which are the key features of an algorithm for being classified as a dynamic programming algorithm?

Exercise n. 3

Discuss how the move to front (MTF) heuristic works for self-organizing lists. How is the complexity of this algorithm computed? Which class of algorithms does the MTF heuristic belong to?