

Algorithms and Data Structures - Theory Exam - January 11, 2021

Write answers clearly in the window below, or write on separate sheets and send photos by clicking on the “Scansiona soluzione“ link on the left of the screen.

Ex 1. Choose the correct statements (there may be more than one correct answer).

When relevant, logarithms are in base 2:

- A** . $\frac{n\sqrt{n}}{\log n} \in O(n)$ **B** . $n^2 \log^3 n \in O(n^{2.5})$
C . $\log(n^7) \in \Theta(\log n)$ **D** . $n^{1.7} \in \Omega(n \log^4 n)$

Ex 2. Describe **Heap sort** algorithm, and prove its computational complexity.

Ex 3. Describe the concept of Minimum Spanning Tree on an undirected weighted graph, and at least one algorithm for computing a MST of a weighted graph.