

**ALGORITHMS, DATA AND SECURITY A.Y. 2020/21**  
**Written exam on May 7, 2021**

<b>Surname</b> _____	<b>Name</b> _____
<b>ID number</b> _____	

**Question 1**

- a) Describe the goals of social network analysis, also presenting some example.
- b) Explain the meaning of “small world” and in what small networks differ from the other kinds of network models we have examined in class.
- c) Describe the goal of the centrality measure and explain two different centrality measures of your choice.

**Question 2**

- a) Describe a clustering algorithm of your choice.
- b) Point out the possible issues that should be addressed when applying this algorithm.

**Question 3**

- a) Describe the goal of the PageRank algorithm.
- b) Explain how the basic PageRank algorithm works.
- c) How does the algorithm address the problem of rank sinks?

**Question 4**

- a) Describe at least two cybersecurity attacks we examined during lessons.
- b) Explain how public key cryptography works and discuss its advantages over private key cryptography.
- c) Why and how is digital signature used by Bitcoin?