

SGN-6056, Introduction to Computational Systems Biology
Teacher: Marja-Leena Linne

Write on each one of your answer sheets:

- course name, date, number of the sheet / total number of sheets
- surname, first name, student ID, signature

You may answer in English or Finnish (or any combination thereof).

1. Describe briefly the following concepts:

- a. gene (1p)
- b. complementary base pairing (1p)
- c. transcription (1p)
- d. amino acid (1p)
- e. cytoplasm (1p)
- f. metabolism (1p)

2. Discuss how the code of mRNA is “read” to produce a protein. (6p)

3. List at most six major organelles of a eucaryotic cell and describe briefly their roles in cellular function. (1p/successfully delivered item) (6p)

4. Discuss requirements for system-level understanding in systems biology (according to Hiroaki Kitano, In: Foundations of Systems Biology, 2001). Write an essay on the topic and specifically concentrate on issues related to system structure identification, system behavior analysis, system control, and system design. (6p)