

Student: \_\_\_\_\_

Group: \_\_\_\_\_

Lecturer: A.S. Eremenko

## HOMEWORK 2

1. What is the fundamental principle of counting:
  - a) rule of sum;
  - b) rule of product;
  - c) divide-and-conquer approach;
  - d) partitions?
2. An ordered sequence of elements selected from a given finite set without repetitions is:
  - a) permutations;
  - b) combinations;
  - c) partitions;
  - d) multinomial coefficient.
3. The idea of “not doing some things at the same time” is the state of:
  - a) combinations;
  - b) rule of product;
  - c) rule of sum;
  - d) the Counting Principle.
4. The number of possible sequences is equal to  $n!$ . What is it?
  - a) multiset;
  - b) permutation;
  - c)  $k$ -permutation;
  - d) rule of sum.
5. A choice of  $k$  elements out of an  $n$ -element set without regard to order is:
  - a) a permutation;
  - b) a  $k$ -permutation;
  - c) a combination;
  - d) a partition.
6. Indicate, what is a special case of a partition of a set:
  - a) permutations;
  - b) combinations;
  - c) partitions;
  - d)  $k$ -permutations.
7. We use the multinomial coefficient for:

- a) partitioning in two subsets;
- b) obtaining the number of combinations with repetition;
- c) obtaining the number of combinations without repetition;
- d) partitioning in more than two subsets.

**Problem 1**

How many different numbers can be generated using six digits, if none of the digits are repeated?

*Solution:*

**Problem 2**

Burger Shack offers only one type of hamburger but seven different toppings. How many ways types of burgers can be created by choosing any four toppings?

*Solution:*

**Problem 3**

How many different ways can Jenny arrange her schedule of 6 classes?

*Solution:*