Discrete Mathematics for Communication Engineering

2019–20–A

Prerequisites: 20119531 Linear Algebra

Brief syllabus

1. Operations over sets, logical notation, relations.

2. Enumeration of combinatorial objects: integer numbers, functions, main principles of combinatorics.

3. Elementary combinatorics: ordered and unordered sets and multisets, binomial and multinomial coefficients.

4. Principle of inclusion and exclusion, Euler function.

5. Graphs: representation and isomorphism of graphs, valency, paths and cycles.

6. Recursion and generating functions: recursive definitions, usual and exponential generating functions, linear recurrent relations with constant coefficients.

7. (Optional) Modular arithmetics: congruences of integer numbers, \( \mathbb{Z}_m \), invertible elements in \( \mathbb{Z}_m \).