

The Oral Examination in Combinatorics

November 12, 2020

If the student's major area is combinatorics then the examination will consist of Module #1 below, plus one of the remaining modules. If the minor area is combinatorics then the subject matter will be Module #1.

- Module 1 (enumerative):

Wilf "generatingfunctionology": Chapters 1,2,3,5.

Stanley "Enumerative Combinatorics", vol. 1, 2nd edition: Chapter 1 (except sections 1.6 and 1.10), Chapter 2 and sections 3.1-3.8.

Other topics based on content of Math 580

- Module 2 (algebraic):

Stanley "Enumerative Combinatorics", vol. 2: sections 7.1-7.17

Macdonald "Symmetric Functions and Hall Polynomials": sections 1.6, 1.9

Haglund "The q, t -Catalan Numbers and the Space of Diagonal Harmonics", Chapter 1, Chapter 3, and pages 123-131 of Appendix A (with Chapter 2 as background).

- Module 3 (analytic):

Pemantle-Wilson "Analytic combinatorics in Several Variables", Chapters 3-10 (with Chapter 2 as background).

Other useful sources include: Flajolet-Sedgewick "Analysis of Algorithms", Dobrushkin "Methods in Algorithmic Analysis"

- Module 4 (probabilistic):

Alon-Spencer-Erdős, "The Probabilistic Method."