For an excellent grade you have to get minimum of 9 questions accepted of each set, for a 'good' - at least 7, and for 'passed' - 5 questions.

Finite group representation

Problem 4.1: Find transposition representation of S_3.

Problem 4.2: Decompose transposition representation of S_3 to direct sum of representations.

Problem 4.3: Let G be a cyclic group. Find all irreducible representations of G.

Problem 4.4: Show that if representation ϕ is one-dimensional, then commutant $[G, G]$ lies in the kernel of representation.

Problem 4.5: Construct any representation of S_4. Which symmetry it describes? Find its character.

Problem 4.6: Consider any other S_4 symmetry. Find the character of the corresponding representation.

Problem 4.7: Find all 1-dimensional representations of S_n

Problem 4.8: Write tables of characters for S_4

Problem 4.9: Show that for finite group G the amount of irreducible non-equivalent by pairs complex representations is equal to the amount of conjugacy classes.