Fields of Advanced Difficulty

Theoretical
Relation between equilibrium constants, electromotive force and standard Gibbs energy;
Inorganic electrochemistry, redox titrations and redox equilibria;
Integrated rate law for first-order reactions, half-life, Arrhenius equation, determination of activation energy, analysis of moderately complex reaction mechanisms;
Solid state structures;
Stereoselective transformations (diastereoselective, enantioselective), optical purity;
Monosaccharides, equilibrium between linear and cyclic forms, pyranoses and furanoses, Haworth projection and conformational formulae, glycosides;
Practical
Advanced inorganic qualitative analysis;
Basic synthesis techniques: filtration, drying of precipitates, thin layer chromatography;