Nomenclature of amines
Basicity of amines, effect of ewg and edg
Separations using amine basicity
Preparation of amines: Reductive amination, most general, mechanism
Reduction of nitro compounds
Alkylation of amines, formation of ammonium salts
Gabriel synthesis
Hofmann rearrangement, mechanism
Curtius rearrangement, mechanism
Hofmann elimination, mechanism
Electrophilic substitution of aryl amines
Review electrophilic aromatic substitution, reactivity and orientation
Formation of diazonium salts, mechanism
Reactions of diazonium salts, CuCl, CuBr, CuCN, KI, Cu₂O/Cu(NO₃)₂/H₂O, H₃PO₂
Diazonium coupling reactions with electron-rich aromatic compounds
Sugar nomenclature: aldohexose, ketopentose, etc.
Structure of α and β (anomeric center) and D and L glucose, Fischer, Haworth (furanose or pyranose), chair conformation
Structures of sugars which are epimeric at a given carbon with glucose
Conversion from Fischer to Haworth to chair conformation drawings and the reverse
Determination of the most stable chair structure
Determination of R,S configuration
Optical activity and meso compounds
Mechanism of mutarotation in water, acid and base catalyzed
Mechanism of glycoside formation
Racemization at α carbon of aldehyde or ketone in base
Conversion of glucose to fructose and mannose by base and the reverse, mechanism
Other reactions of sugars
1) Esterification
2) Ether formation
3) Chain lengthening, mechanism
4) Chain shortening, mechanism
5) Reduction
6) Monoacid formation
7) Diacid formation
8) Periodate cleavage
9) Silyl protecting group: put on and take off
Disaccharides
1) Identification of linkage (e.g. 1,4' and α and/or β at each sugar)
2) Glycoside or hemiacetal at each sugar, reducing or not
3) Hydrolysis
Starch and cellulose
Names and structures of at least two aromatic heterocycles
Acidity and basicity of aromatic heterocycles
Electrophilic substitution of furan, pyrrole and thiophene
Names and structures of at least two amino acids (3-D) and a peptide formed from them
Acidity and basicity of amino acids
Hydrolysis of peptides
Reaction of bromoacids with excess ammonia
Strecker synthesis
Gabriel modification for amino acids
Amidomalonate synthesis
Acylation and esterification of amino acids
Use of Fmoc protecting group in peptide synthesis