

## Study Guide for Exam 3

### Chapters 21, 22, 23, 24 and 25

#### Carbanions II

Claisen Condensations

Nucleophiles in  $S_N2$  Reactions with Alkyl halides

Malonic Synthesis of Carboxylic Acids

Acetoacetate Synthesis of Ketones

Michael Addition (Ch. 27, Sect. 27.7)

#### Amines

Nomenclature

IUPAC and Common

Salts of Amines

Synthesis

Reduction of Nitro Compounds

Ammonolysis ( $1^\circ$  or  $\text{CH}_3$ ) Halides

Reductive Amination

Reduction of Nitriles

Hoffman Degradation

Reactions

As Bases with Acids

Alkylation

Reductive Amination

Conversion into Amides

EAS

Hofmann Elimination from Quaternary Ammonium Salts

Reactions with Nitrous Acid

#### Diazonium Salts

Synthesis: (1)  $\text{HNO}_3/\text{H}_2\text{SO}_4$ ; (2)  $\text{H}_2, \text{Ni}$ ; (3)  $\text{HONO}$

Reactions

Coupling to Form Azo Dyes

Replacements

Br, Cl, CN

I

F

OH

H, etc

#### Phenols

Nomenclature

Synthesis

From Diazonium Salts

Alkali Fusion of Sulfonates

Reactions

As Acids with Active metals

Ester Formation

Ether Formation  
EAS