

Organic Chemistry 1 Final Exam Review

Written by punjalak

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Organic Chemistry 1 Final Exam Review Study Guide Topics:

Alkene Addition Reactions:

Hydroboration-Oxidation (BH_3 , THF, H_2O_2 , OH^-)

Oxymercuration-Demercuration ($\text{Hg}(\text{oac})_2$, H_2O , NaBH_4)

Epoxidation: MCPBA or Peroxyacid Epoxide Formation

Permanganate Oxidation - KMnO_4 , OH^- , Cold, Dilute

Simmons Smith Reaction - Zn , Cu , CH_2I_2

Halogenation: Br_2 , Cl_2 , CH_2Cl_2

Radical Monobromination: NBS + Alkene

Halohydrin Reaction: Br_2 , Cl_2 , H_2O

Cyclopropane Ring: CHCl_3 or CHBr_3 , KOH Carbene Intermediate

Alkoxymercuration-Demercuration: $\text{Hg}(\text{OAc})_2$, CH_3OH , NaBH_4

Ozonolysis: O_3 , Ozone, Zn , H_2O , HOAc , $(\text{CH}_3)_2\text{S}$ or Me_2S

Syn Hydroxylation: OsO_4 , H_2O_2

Hydrohalogenation: HBr , HBr & ROOR peroxides - H_2O_2

Hydrogenation: H_2 and Pt , or D_2 and Pd

Alkyne Synthesis: Acetylene, NaNH_2 - Sodium Amide + Alkyl Halide

Cis Alkene - H_2 Lindlar's Catalyst - Pd , BaSO_4 , Quinoline

Trans Alkene - Na , Li , NH_3

Hydroboration-Oxidation, Alkynes: $(\text{Sia})_2\text{BH}$, THF, H_2O_2 , OH^- , R_2BH

Oxymercuration of Alkynes: HgSO_4 , H_2O , H_2SO_4

Oxidative Cleavage of Alkynes to Carboxylic Acids: O_3 or KMnO_4

Alcohol to Alkyl Halide: SOCl_2 , PBr_3 , HBr

Oxidation of Alcohols: H_2CrO_4 , PCC, $\text{Na}_2\text{Cr}_2\text{O}_7$, H_2SO_4 , KMnO_4

Reduction to Alcohol: NaBH_4 , LiAlH_4 ,

Ethylene Glycol Cyclic Acetal Protecting Groups

Grignard Reagent - Reduction of Aldehydes & Ketones to Alcohols

$\text{S}_\text{N}2$ Reactions - KI , Acetone, NaCN , DMF, NaN_3 , HMF, NaSH ,

$\text{S}_\text{N}1$ Reactions: Solvolysis - CH_3OH , H_2O - Racemic Mixture

$\text{E}1$ Reactions: Alkene Formation From Alkyl Halides

$\text{E}2$ Reactions: Zaitsev vs Hoffman - OH^- & TBuOK

Other Topics In This Review Include:

Hybridization of an atom or a bond

Bond Angle & Molecular Geometry

How To Find The Number of Sigma & Pi Bonds in a Molecule

Bond Length of Alkanes, Alkenes, & Alkynes

Identifying Nucleophiles, Electrophiles, Lewis Acids & Bases

Drawing Resonance Structures

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How To Identify The Major Resonance Contributor

Carbocation & Carbanion Stability

Rate of SN2 Reaction

How To Identify The Functional Groups In a Molecule

Monochlorination & Monobromination

Energy Diagrams for SN1 & SN2 Reactions

Endothermic, Exothermic, Hammond's Postulate

Enantiomers, Diastereomers, Meso Compounds, Isomers

R & S Configuration, Chiral Carbons, Stereoisomers, Stereocenters

Polar Protic Solvents & Polar Aprotic Solvents

How To Find Which Alkyl Halide Works Better For an SN2 or SN1 reaction

Markovnikov vs Anti Markovnikov Addition

Syn vs Anti Addition

Newman Projections - Staggered, Eclipsed, Anti, & Gauche

Primary, Secondary, & Tertiary Carbons

Nomenclature, E & Z Cis Trans Geometric Isomers

How to Find Which Nucleophile is Stronger

Steric, Torsional, & Ring or Angle Strain

Cyclohexane Conformation - Chair, Boat, Half Chair, Twist Boat

Chair conformation stability

How To Find Which Acid is Stronger

How To Rank Acids in Order of Increasing Acid Strength - Pka

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