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This video provides an overview of the most important reactions of alkenes that you need to know for your test. This video quickly shows you how to find the major product. It discusses which reactions proceed via markovnikov and antimarkovnikov addition as well as syn vs anti addition. It also shows you how to tell if the product of a reaction will be a single meso compound or a pair of enantiomers. It provides a ton of examples and practice problems.

Here is a list of reactions that are covered:
addition of hydrogen halide to an alkene: alkene to alkyl halide
1-butene + HBr = 2-bromobutane
1-butene + HBr + H2O2 = 1-bromobutane
1-butene + HCl = 2-chlorobutane
3-methyl-1-butene + HBr = 2-bromo-2-methylbutane

Alkene to Alcohol:
Hydroboration Oxidation: vinyl cyclopentane + BH3 THF H2O2 OH-
Oxymercuration Demercuration: Hg(OAc)2 + H2O + NaBH4
Acid Catalyzed Hydriation: H3O+ or H2O and H+

Alkene to Cis / Syn Diol - Cyclohexene + KMnO4 + OH- cold dilute
Alkene to Alkane - H2 & Pt or D2 & Pd/C
Alkene to Vicinal Dihalide - Br2 + CH2Cl2 & Cl2 + CH2Cl2
Alkene to Cyclopropane Ring - Simmons Smith Reaction
Zn(Cu) + CH2I2, CHCl3 + KOH, CHBr3 + NaOH (alpha elimination)

Alcohol to Ether -
Vinyl Cyclopentane + Hg(OAc)2 / CH3OH + NaBH4
Vinyl Cyclopentane + CH3CH2OH / H+

Alkene to Aldehydes, Ketones, & Carboxylic Acids: Ozonolysis
1-ethylcyclohexene + O3 + (CH3)2S
2-butene + KmO4 + H3O+
2-methyl-2-pentene + O3 + (CH3)2S

Alkene to Cis / Syn Diol
1-methylcyclohexene + OsO4 + H2O2

Alkene to Halohydrin to Epoxide
1-methylcyclohexene + Br2 + H2O Followed By NaOH
1-methylcyclohexene + Cl2 + H2O Followed By a Strong Base

Alkene to Epoxide to Trans / Anti Diol:
Cyclohexene + Peroxyacid RCO3H or MCPBA followed by H3O+
MCPBA stands for meta-chloroperoxybenzoic acid

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