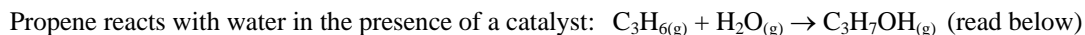
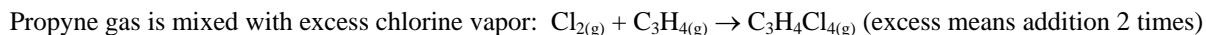
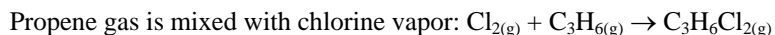


Chemical Reactions : Organic Reactions: Student Review Notes**Addition Reactions**

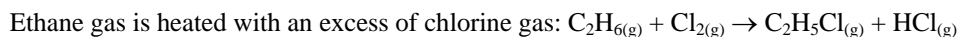
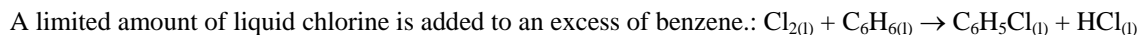
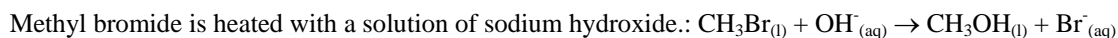
In an addition reaction, a molecule adds to each side of a multiple bond in a hydrocarbon. The multiple bond gets reduced by one order for each such addition. Here are some examples:



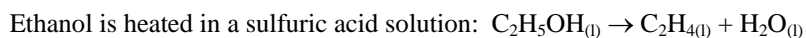
As opposed to the addition of a diatomic species such as bromine or chlorine, a molecule such as water creates isomers. There are two positions that the hydroxyl group can occupy and there is a rule that tells which isomer will be predominantly formed. The rule is called Markovnikov's Rule and it states: when a polar molecule adds to a multiple bond, the electropositive part of the molecule bonds to the carbon that holds the largest number of hydrogen atoms (i.e. in the case of water, hydrogen goes to the carbon with the most hydrogen atoms attached and the hydroxyl group goes to the carbon with the fewer number of bonded hydrogen atoms).

Substitution Reactions

In a substitution reaction, an atom or a group of atoms in a molecule is replaced by a different atom or group of atoms. One thing to watch is that for compounds such as benzene that have a delocalized pi-structure undergo substitution reactions, not addition reactions. Here are some examples:

**Elimination Reactions**

An elimination reaction is one in which a stable molecule is lost with the formation of a pi-bond. It's essentially the reverse of an addition reaction. Here are some examples:

**Condensation Reactions**

Condensation reactions occur when two molecules combine by splitting out a small molecule, typically water.

Here are some examples:

