8.3 review questions

8.3 Review Questions

- Complete combustion produces only CO₂ and H₂O. Incomplete combustion may produce C or CO as well. Complete combustion occurs when there is an excess of oxygen. Incomplete combustion occurs when there is a limited amount of oxygen.
- Alkanes typically undergo substitution reactions. Alkenes and alkynes undergo addition reactions.
- 3. Water or a hydrogen halide are commonly eliminated.
- 4. In an addition reaction, the number of atoms bonded to the carbon atoms in the skeleton increases. In a substitution reaction, the number of atoms bonded to the carbon skeleton remains the same.
- A hydrogenation reaction is an addition reaction where hydrogen atoms are added at the site of a double or triple bond. A condensation or dehydration reaction is an elimination reaction where water is eliminated.

6. a) combustion
$$+\frac{7}{2}O_2 \rightarrow 3\omega_1 + 3H_{20}$$

$$\bigcirc$$
 + Hz \rightarrow \bigcirc

e) addition

- 8. A monomer is a repeat unit in a polymer. When many monomers are linked together, they form a polymer.
- 9. In addition polymerization, double or triple bonds are broken in a monomer to link together to form long polymer chains. An example is ethene that polymerizes to polyethylene.
- 10. In condensation polymerization, smaller molecules are linked together when a molecule is eliminated. An example of this is the production of nylon 6,6.
- 11. Proteins, DNA and cellulose.

12. a)

Syndiotactic Polystyrene (two chains shown)

