1. **Classify** the type of polymerization for each of the following polymers:
   a) **polyethenes**  
   b) **polyamides**  
   c) **polyesters**  
   d) **polysaccharides**
   
   ![Polyethene](attachment:polyethene.png)  
   ![Polyamide](attachment:polyamide.png)  
   ![Polyester](attachment:polyester.png)  
   ![Polysaccharide](attachment:polysaccharide.png)

2. **Draw** a structural formula of three repeating units of:
   a) a polymer of 1-butene  
   b) a polymer of vinyl fluoride (fluoroethene)
   
   ![1-butene](attachment:1-butene.png)  
   ![Vinyl fluoride](attachment:vinyl_fluoride.png)
   
   c) a polymer of chlorofluoroethene  
   d) a polymer of 1,1-dichloroethene (saranwrap)
   
   ![Chlorofluoroethene](attachment:chlorofluoroethene.png)  
   ![1,1-Dichloroethene](attachment:1,1-dichloroethene.png)
   
   e) a polymer of oxalic acid and ethan-1,2-diol
   
   ![Oxalic acid and ethan-1,2-diol](attachment:oxalic_acid_and_ethan-1,2-diol.png)

3. **Draw** a structural formula of the monomer of the following polymer:
   
   ![Monomer](attachment:monomer.png)
4. What monomer could be used to produce each of these polymers?

a) \[ -CH-CH-CH-CH-CH-CH- \]
   \[ CH_3 \quad CH_3 \quad CH_3 \quad CH_3 \quad CH_3 \quad CH_3 \]

b) \[ -C-C-C-C-C-C- \]
   \[ CH_3 \quad Cl \quad CH_3 \quad Cl \quad CH_3 \quad Cl \]

5. What functional groups must be present to form a polyester?

- a carboxylic acid and
- an alcohol

6. What kind of polymerization does the formation of a polyamide involve?

\[ \text{Condensation polymerization} \]

7. Draw a structural formula equation to show a repeating unit of a condensation polymer formed from the following compounds.

\[
\text{HOOC-CH}_2\text{-CH}_2\text{-COOH and HO-CH}_2\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-OH.}
\]

\[ \left[ \text{C-CH}_2\text{-CH}_2\text{-C-} \right]_n \]

8. Draw a structural formula equation to show a repeating unit of a condensation polymer formed from the following compounds.

\[
\text{H}_2\text{N(CH}_2\text{)_6NH}_2 \text{ and HOOC(CH}_2\text{)_6COOH}
\]

\[ \left[ \text{NH-CH}_2\text{-NH-} \right]_n \]