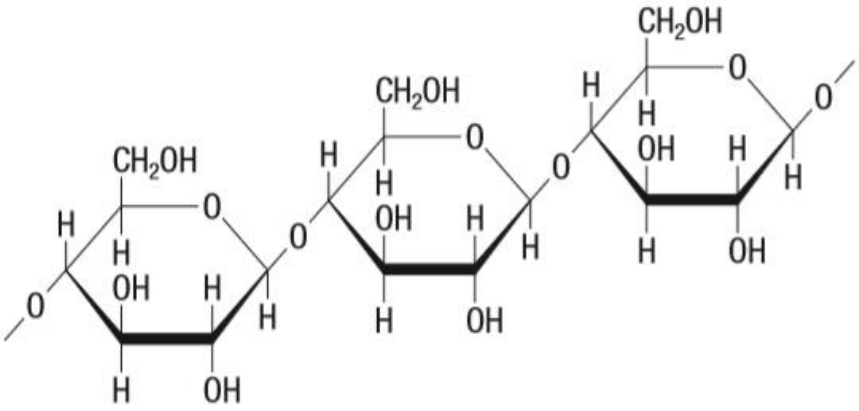
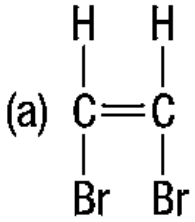
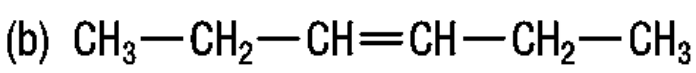
G12 Chemistry: Class 4 Homework

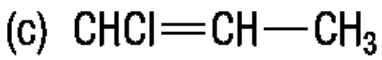
1. The figure below shows the structure of a polymer called cellulose. Draw a diagram of the monomer that makes up this polymer. **[1 mark]**



2. Draw and name the polymers that would be produced from each of the following monomers. Circle the repeating unit. **[6 marks]**

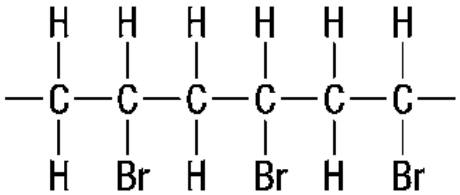




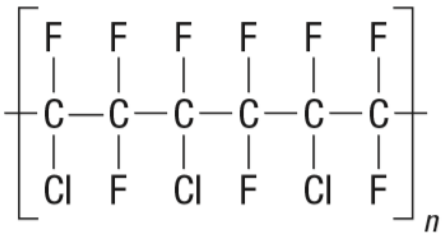


3. Draw and name the monomer used to produce the following polymers: **[10 marks]**

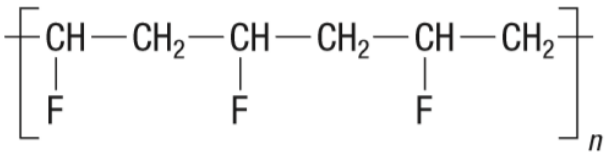
a)



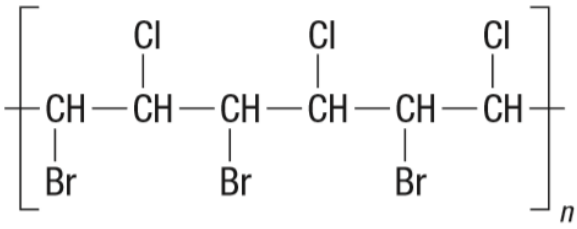
b)



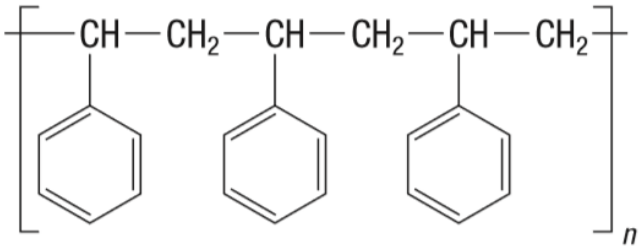
c)



d)



e)



4. Polystyrene can be made more rigid by copolymerizing styrene with p-divinylbenzene.
   a) Draw the structure and write the IUPAC name of p-divinylbenzene. **[2 marks]**

   b) How does p-divinylbenzene make the copolymer more rigid? **[2 marks]**

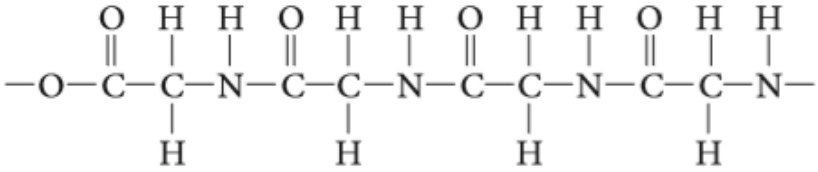
5. Draw a structural diagram of the polymer formed by the condensation reaction of: **[6 marks]**

   a) Propane-1,3-diol and pentanedioic acid

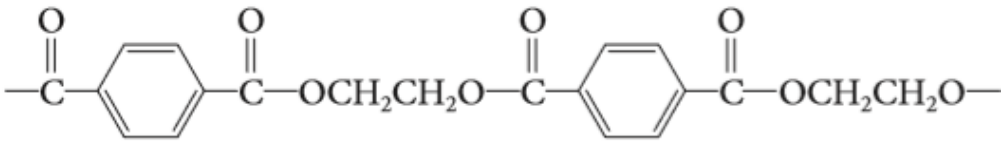
   b) Butanedioic acid and a 5-carbon diamine

   c) Hexanedioic acid and a 3-carbon diamine

6. Draw the structure of the monomers that forms this homopolymer by condensation: **[2 marks]**



7. Draw the structures of the monomers that react to form this polyester copolymer. **[2 marks]**



8. A condensation polymer can be formed between propane-1,3-diol and 1,4-diaminobutane.

   a) Draw the structures of both reactants, circling the functional groups that are involved with the polymerization. **[2 marks]**

   b) Draw the structure of the polymer that is produced. **[1 mark]**

9. Draw three units of the polymer made from ethanedioic acid and ethane-1,2-diol. **[3 marks]**

10. Write the names and draw the structural formulas for the reactants that form this polyamide. **[2 marks]**