Video worksheet - addition and condensation polymerisation.

1. Consider the compound prop-2-enoic acid.
a. Draw the skeletal and structural formulae of this compound.
b. Prop-2-enoic acid can be used as a monomer to form a polymer known as poly acrylic acid (PAA). Draw the repeating unit of this polymer made of two monomers.
c. What type of reaction is used to form PAA?
2. Consider the addition polymerisation of $\mathrm{CH}_{3} \mathrm{CH}=\mathrm{CHCH}_{3}$. Which of the following options best shows a possible structure of the resulting polymer?

B. $\quad \mathrm{CH}_{3} \quad \mathrm{CH}_{3} \quad \mathrm{CH}_{3} \quad \mathrm{CH}_{3} \quad \mathrm{CH}_{3} \quad \mathrm{CH}_{3}$ $\begin{array}{ccccc}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}-\mathrm{CH}- \\ \mathrm{CH}_{3} & \mathrm{CH}_{3} & \mathrm{CH}_{3} & \mathrm{CH}_{3} & \mathrm{CH}_{3}\end{array}$

D. $\mathrm{CH}_{3} \quad \mathrm{CH}_{3}$
$\stackrel{-\mathrm{CH}-\mathrm{CH}_{2}-\mathrm{CH}_{2}-\mathrm{CH}_{1}-\mathrm{CH}_{2}-\mathrm{CH}_{2}-\mathrm{CH}-\mathrm{CH}_{2}-\mathrm{CH}_{2}-\mathrm{CH}_{4}}{\stackrel{\mathrm{C}}{+}-\mathrm{CH}_{2}-}$
3. Consider a small section of a polymer shown below.
a. What monomers were used to form this polymer.
b. Draw the structural formula of each monomer.

4. Consider a small section of a polymer shown below.
a. What monomer/s was/were used to form this polymer.
b. Draw the structural formula of each monomer.

5. Consider the tripeptide shown below. It is formed from three amino acids in a condensation polymerisation reaction.
a. Identify and circle the type of bond linking each monomer.
b. Identify each amino acid.

6. Consider the short polymer chain shown below. It is formed from two different monomers in a condensation polymerisation reaction.

a. A. Identify and circle the type of bond linking each monomer.
b. Draw the structural formula of each monomer.
7. Consider the formation of nylon 6,6. It is formed from two monomers, shown below, in a condensation polymerisation reaction.

a. Using IUPAC convention, name the second monomer.
b. Draw the structural formula of the repeating unit, in the space provided on the right.
c. Using your answer to b. above, identify and circle the type of bonds linking each monomer.
d. Given the formula mass of adipoyl chloride is 183
$\mathrm{g} / \mathrm{mol}$ and the diamine has a formula mass of $116 \mathrm{~g} / \mathrm{mol}$. Find the molar mass of a polymer of nylon formed from 6 monomers.
