

Solutions

2.1 A Condensation forms a linkage with a small molecule such as water released in the simplified model; hydrolysis uses water to break such a linkage. Polymer sequence, branching, polarity and three-dimensional shape matter. Saturated fatty acids have no carbon-carbon double bond, while unsaturated fatty acids have at least one; this difference can influence packing under stated conditions.

2.2 An unbranched chain of n residues has $n-1$ links: $35-1=34$ peptide bonds.

2.3 False. Not every protein is an enzyme, and not every catalyst is a protein. Lipids are not all polymers of repeating monomers. A protein can lose function when its folding changes without every peptide bond being broken.

2.4 peptide bond. peptide bond means A covalent linkage between amino-acid residues.

3.1 Initially $2 \times 9 = 18$; the 20-residue chain has 19. One new bond forms. This is linkage accounting, not a complete biosynthetic pathway.