1. Glucose is a(n) (ALDOSE, KETOSE) and a (MONOSACCHARIDE, DISACCHARIDE).

2. Sucrose is a (MONOSACCHARIDE, DISACCHARIDE).

3. Starch is a (DISACCHARIDE, POLYSACCHARIDE).

4. A Fatty acid is a (LONG, SHORT) chain hydrocarbon with a _________________ group at the end of the chain.

5. Saturated fats are (SOLID, LIQUID) and Unsaturated fats are (SOLID, LIQUID) at room temperature.

6. What structure is common to all hormones? Sketch this molecule.

7. Below is the molecule d-galactose. Is it an aldose or ketose? How many chiral carbons does it have? Circle each C atom that is chiral.

```
O
H — C
H — C — OH
HO — C — H
HO — C — H
H — C — OH
CH₂OH
```
8. Complete the reaction below between glycerol and three oleic acid molecules to form a triglyceride.

\[
\text{H}_2\text{C} \quad \text{OH} \quad \text{H}_2\text{C} \quad \text{OH} \quad \text{H}_2\text{C} \quad \text{OH} + 3 \text{HO} \quad \text{C} \quad \text{(CH}_2)_2\text{CH=OH(CH}_2)_2\text{CH}_3 \quad \text{H}^+ \quad \rightarrow \\
\text{H}_3\text{C} \quad \text{CHO} \quad \text{O} \quad \text{CH} \quad \text{(CH}_2)_7\text{CH=CH(CH}_2)_7\text{CH}_3
\]

9. Show the reaction that occurs between the two amino acids alanine and serine.

\[
\text{CH}_3 \quad \text{CH}_2\text{OH} \\
\text{H}_2\text{N} \quad \text{C} \quad \text{C} \quad \text{OH} \quad \text{H}_2\text{N} \quad \text{C} \quad \text{C} \quad \text{OH} \\
\text{H} \quad \text{O} \quad \text{H} \quad \text{O} \quad \text{Alanine} \quad \text{Serine}
\]

10. What two functional groups are common to ALL amino acids?

11. What is meant by the term primary structure in proteins?

12. What are the three most common types of secondary structures?

13. What is common to each type of secondary protein structure?

14. What type of interactions are found in the tertiary structure of proteins? How do they differ from that of the secondary structures?