

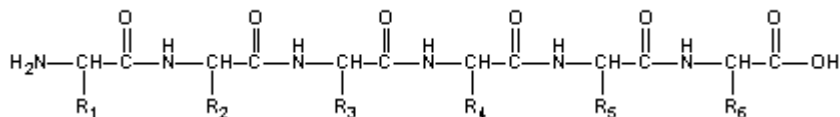
## Section 3C Review

Name: \_\_\_\_\_

### Part 1: Identification of Molecules

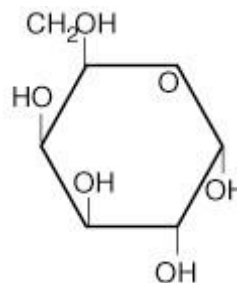
For each of the following organic structures, specifically identify what kind of carbohydrate, fat or protein the molecule is.

1)



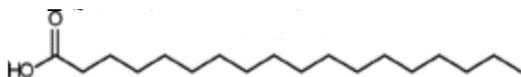
protein

2)



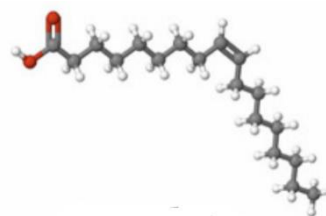
Carbohydrate,  
monosaccharide

3)



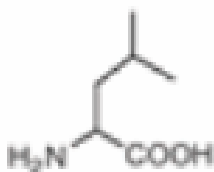
Saturated fat

4)



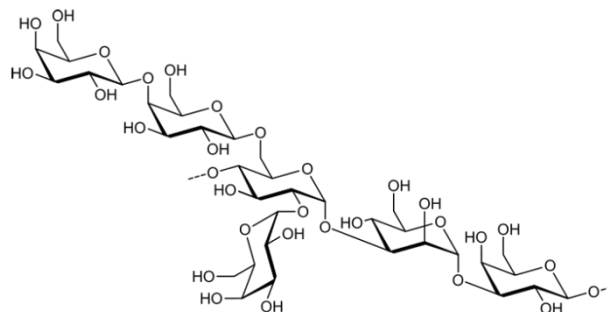
Cis monounsaturated fat

5)



Amino acid

6)



Carbohydrate, polysaccharide

### Part 2: Lab Questions

1) A food sample contains 6 grams of carbohydrates, 10 grams of fat and 4 grams of protein.

a) How many Calories will be in the food sample?

130 Calories

b) What is the percentage of each type of food molecule by Calories?

18.5% Carbs, 69.2% fats, 12.3% proteins

2) A certain energy drink contains 32 grams of sugar per 500 mL drink. The density of the drink is 1.18 g/mL. How many Calories does the drink have, and what is the pph of the sugar in the drink?

128 Calories  
5.4 pph

3) The following data is collected in the analysis of a granola bar:

Mass of beaker	62.36 g
Mass of beaker and granola bar	75.86 g
Mass of beaker after fat extraction	73.86 g
Mass of filter paper	0.99 g
Mass of filter paper with protein	2.49g
Mass of beaker after filtration (water was added)	126.82 g
Mass of beaker after extraction of water (boiling)	72.36 g

a) Determine the mass for each the carbohydrates, fats and protein in the candy bar.

2.00 g fat, 1.50 g protein, 10.00 g carbohydrates

b) Determine the Calories in the granola bar

64 Calories

### Part 3: Questions

1) What is the primary use of saturated fats in the body? How do trans fats cause harm in this process?

Saturated fats are primarily used to make cell membrane for newly replicated cells. Since trans fats are roughly the same shape as saturated fats, they can be mistakenly be placed in the cell membrane. Trans fats are not exactly the same shape, so they create different size holes in the cell membrane, which can allow toxins and other materials that shouldn't be in the cell into the cell. This can cause irreparable damage to the cell.

2) Describe the ways that photosynthesis and respiration (combustion) are opposite processes.

Photosynthesis takes carbon dioxide and water along with energy from the Sun (endothermic) to make glucose and oxygen. When an animal undergoes cellular respiration, it burns the glucose in the presence of oxygen to release energy (exothermic) and make carbon dioxide and water.

3) What two biomolecules can polymerize? How is this accomplished?

Carbohydrates and amino acids can polymerize. When a carb or amino acid polymerizes, it undergoes a condensation reaction. Essentially, an -OH from one molecule and an -H from another molecule fall off the carb (or amino acid) and form water. This makes two open bonding places, where the molecule attach. This happens over and over again to build a polymer of a polysaccharide (for a carb) or a protein (from an amino acid)

4) What functional groups characterize each type of food molecule? In other words, what functional groups are on each type of food molecule?

Lots of -OH for a carbohydrate, basically one on every carbon. -COOH on the end of a fat molecule. -COOH and NH<sub>2</sub> on a protein.

5) In what order are food molecules processed by your body? Which of the three types of fat molecules can be stored by the body?

Carbs are processed first, then fats, then proteins. Saturated fats are stored by the body.