Biology I
Organic Macromolecules - Unit 1 Test
Study Guide

Resources: *notes, website, Chapter 2.3 and Chapter 3, baseline data from lab*

This test revolves around 5 questions:

A. What is the monomer of _____? *(can you name it and/or identify it by picture or formula)*
B. What polymer(s) can be made from each monomer? *(can you name it and/or identify by picture or formula)*
C. What is the function of the polymer (macromolecule)?
D. How are organic molecule described in everyday life (including on food labels)?
E. What laboratory tests can best be used to identify each macromolecule?

If you can identify the following, you will have success on the Unit 1 Test.

- Monomers
- Importance/Uniqueness of Carbon
- 5 functional groups
- Polymers
- Dehydration Synthesis/Hydrolysis
- Levels of polypeptide (protein) structure
- Enzyme structure and function
- Conditions that affect enzyme function
- Be prepared to evaluate a food label.
- Be prepared to analyze charts & graphs containing lab data and/or enzyme function data.

Here's a chart to help organize your thoughts:

Macromolecule Group	***Monomer***	***Polymer***	***Function***	***Lab Test***
Carbohydrates	• - - -	• dissaccharide - - - • polysaccharide - - - -		
Lipids	• - -	• triglyceride • phospholipid • steroids *(not necessarily made from fatty acid monomer)*		
Proteins	•	• - - - -		
Nucleic Acids	•	• •		didn't do one

Questions to have Mom-Dad-little-brother-older-sister-dog ask you....

Carbon is an element present in all organic molecules. As seen in class, it forms the backbone of all the molecules of interest. Why?

Consider:
- type and number of bonds Carbon commonly forms
- elements Carbon typically bonds with
- size and stability of structures/shapes Carbon can form

The four categories of organic molecules studied in class are commonly called macromolecules because they are big (macro = large). They are technically polymers built from smaller subgroups called monomers. What is/are the monomers for these four classes of macromolecule and what one chemical process builds these monomers into polymers? What one chemical process breaks them down?

Consider:
- carbohydrates
- lipids
- proteins
- nucleic acids

All four of the macromolecules studied play multiple roles in living organisms. While carbs and lipids re primarily dealing with energy, proteins serve a large number of functions. One of the most critical is to act as a catalyst for chemical reactions important to life. When a protein performs this task, it is known as an enzyme. Why are proteins best suited for this job and what factors might disrupt enzyme performance?

Consider:
- how proteins are built/structured
- how enzymes function
- the effects of breaking peptide binds via heat and pH

Which macromolecules are part of a 'healthy' diet? Why? Which macromolecules may lead to heath issues? Why? How are they detailed in the marketplace so that educated persons can make good eating decisions?

Consider:
- simple sugars
- complex carbohydrates
- saturated fats
- unsaturated fats

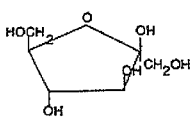
If you can answer/discuss all aspects of the questions above, this test should be a breeze!
Study hard!
Good Luck!

Biology I

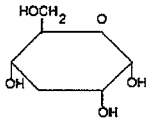
Organic Macromolecules - Monomers & Polymers
Study Guide

Be able to recognize these molecules and processes within context. You should also know the function(s) of each organic macromolecule.

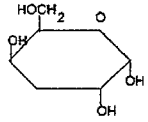
Carbohydrates



Fructose



Glucose



Galactose

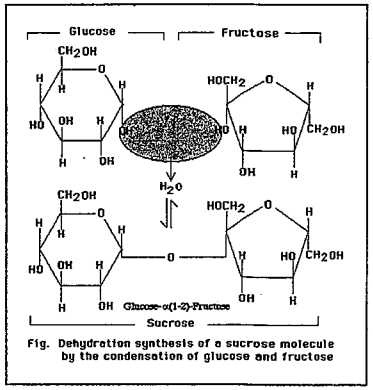
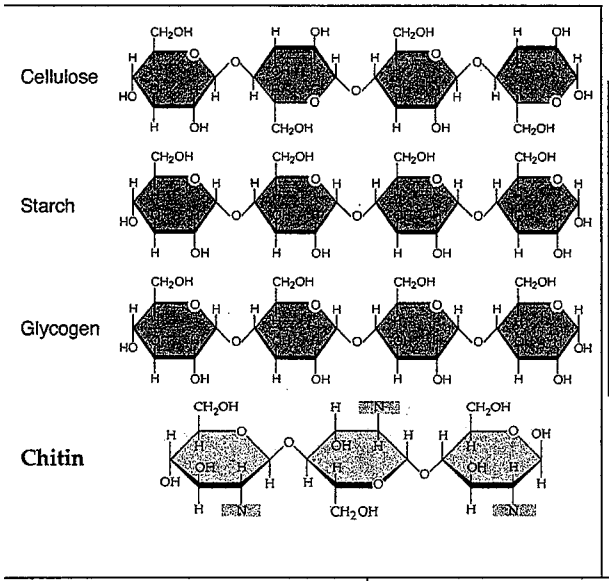
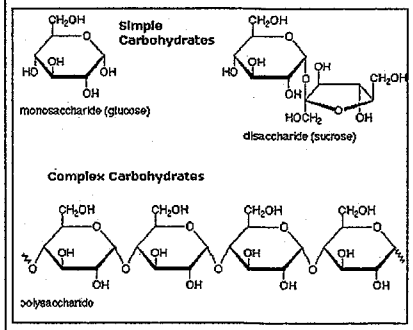
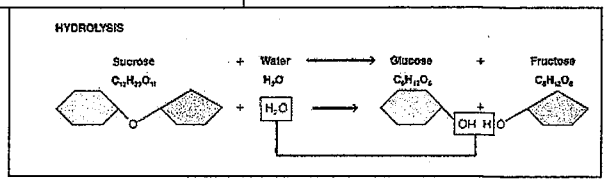


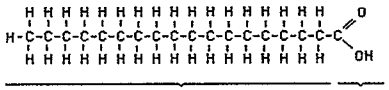
Fig. Dehydration synthesis of a sucrose molecule by the condensation of glucose and fructose



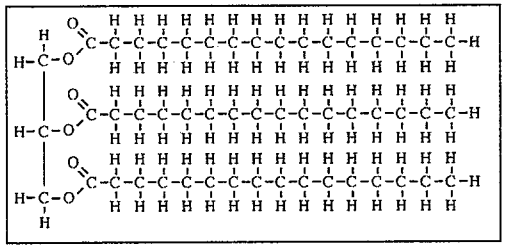


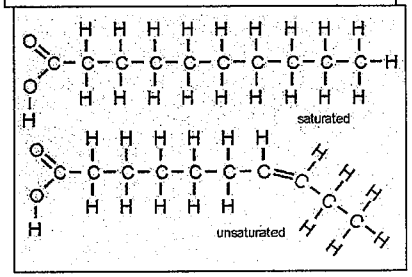


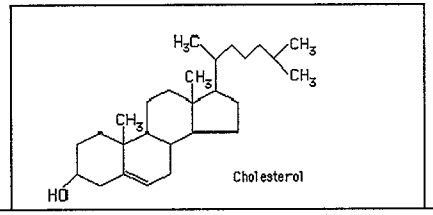
Lipids

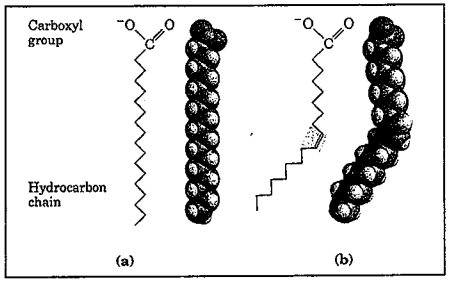


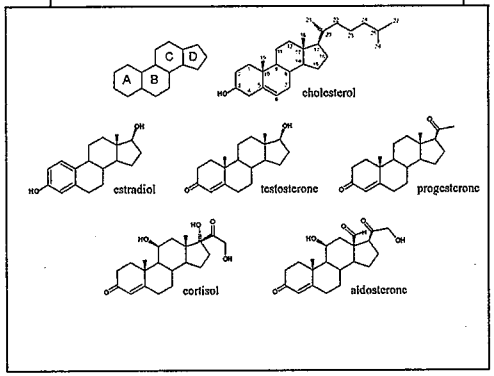
Essential features of a fatty acid

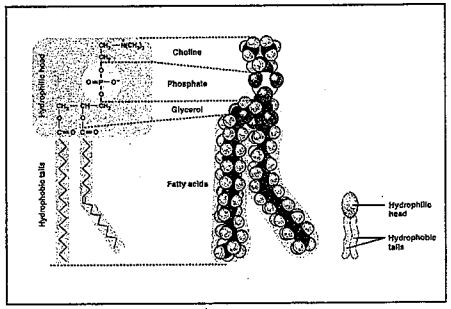




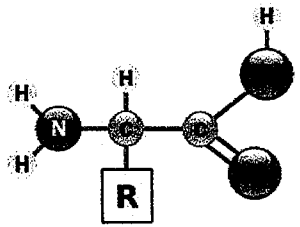


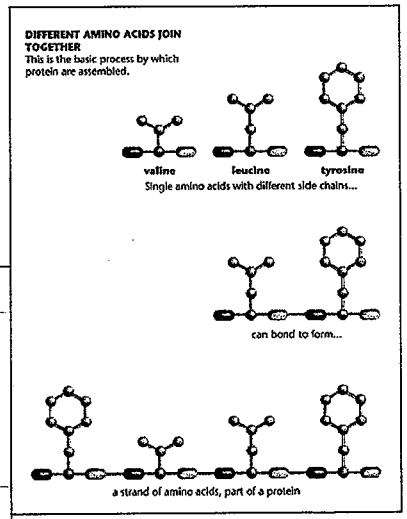


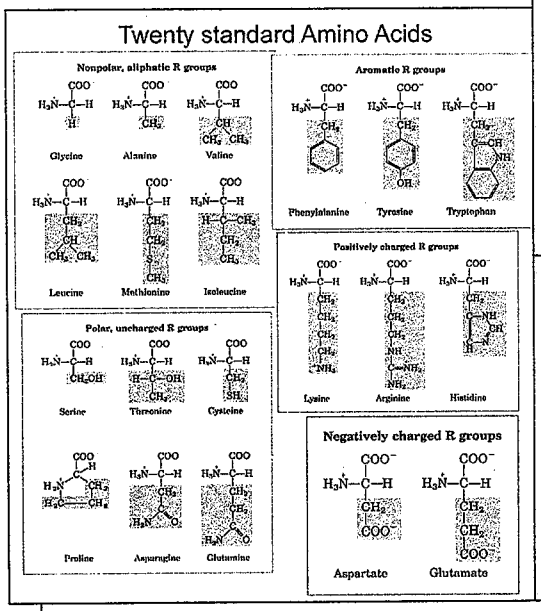


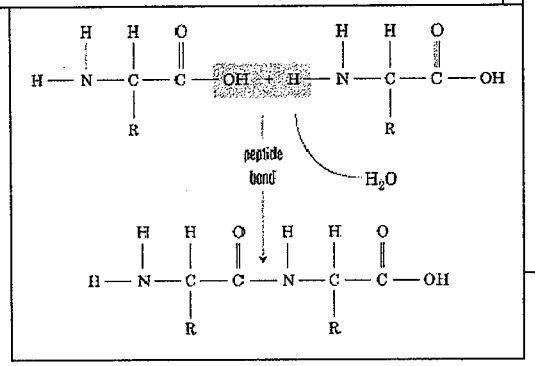


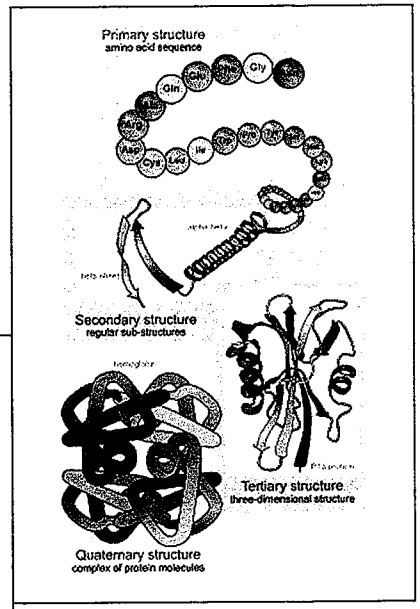
Proteins











Nucleic Acids