



## **Biology 241 Placement Examination**

### **Information Sheet**

In order to enroll in Biology 241 at Olympic College, any student must have earned a grade of 2.0 or higher in both Chemistry 121 and Chemistry 131, OR received a 2.0 in Chemistry 121 and answered at least 15 of 20 questions correctly on the Biology 241 Placement Examination.

The Biology 241 Placement Examination covers some of the fundamental topics in organic and biochemistry and consists of 20 multiple-choice questions. Topics include (but are not limited to) proteins, DNA, and RNA.

Each student must bring a #2 (or softer) pencil to the exam. Olympic college will supply the exam and answer sheet. There is no charge for the exam.

To make an appointment to take this exam, contact:

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# Biology 241 Placement Exam Study Sheet

## General Organic Chemistry

- Know what makes carbon itself and carbon compounds so unique.
- What is the difference between a molecular formula, a structural formula and a condensed formula?
- Define monomer, and polymer.

## Carbohydrates

- Where in the real world do you find carbohydrates? What are they and what are they composed of?
- Define CBH's (carbohydrates) using functional groups and know the difference between a monosaccharide, disaccharide, oligosaccharide and polysaccharide.
- Recognize the important disaccharides (maltose, lactose, sucrose), oligosaccharides, dextrans, polysaccharides (starch, amylose, amylopectin, glycogen, cellulose, hyaluronic acid). Where would you find them? Recognize the type of bond, and know what the significance is in human diets.

## Proteins and Enzymes

- Recognize the amide functional group. What two compounds react to form amides? What macromolecule has amide bonds?
- How are amides made? What is the reaction called?
- What elements make up proteins? What are the repeating subunits of proteins?
- Know the main functional groups in amino acids, and what types of bonds are formed between these functional groups.
- How are proteins classified? Explain the difference between globular and fibrous/structural proteins, give examples of each, and their function in the human body. Know especially structure and function of antibiotics.
- Recognize and explain the bonding in primary, secondary, tertiary, and quaternary structures of proteins.
- Explain denaturation/renaturation.
- Define the terms enzyme, enzyme-substrate, lock and key, induced fit, and how that relates to the different types of enzyme specifically.

## Lipids

- Chemically define lipids, know what elements combine to form them.
- Understand how lipids are classified.
- Chemically define a fatty acid. How many carbons do natural fatty acids have?

- Explain what mono, di, triglycerides are, tell what type of bonding they contain.
- Define phospholipids; know their composition, and where you find them in a cell.

### Nucleic Acids

- What are nucleic acids? What do the initials stand for? Where in the cell are they found?
- What kinds of bonding are found in nucleotides, nucleoside, and nucleic acids?
- Make sure you know the differences between RNA and DNA. If I showed you a nucleotide you need to tell me if it is from DNA or RNA.
- Know what a primary or secondary structure is.
- Know the function in the cell of DNA and the three RNA's.
- Know what the process of protein synthesis from transcription to translation to release. Where do each of these take place, what organelles are involved? How does this differ from self-replication?

### Metabolism

- Define metabolism, anabolism, and catabolism.
- Why does the cell go to all this trouble to produce this phantom molecule that is made quickly and used up just as quickly that is called ATP? What are some of the uses the cell has for ATP? What is one word that would describe these uses?
- Recognize the chemical structure for ATP?