Biology Placement Test Guidelines **Revised 10-2018**

To schedule an appointment to take the Biology placement test visit www.cctech.edu and select **Testing Center Registration** to follow the easy steps to make an appointment. If you need assistance, contact the Testing Center at testingcenterstaff@cctech.edu or (803)774-3306.

If you have any questions about the test content and format contact Sena Gibson at gibsontp@cctech.edu or (803)778-6628. Her Office is 603 in Building 600 Science.

This test is designed to ensure that you are prepared for your upcoming Anatomy classes, as well as your future program of studies. Your science courses form the foundation for all of the health science programs. If you are placed into BIO 112 or 101, consider these courses as an opportunity to construct a solid foundation for your future success.

Biology Placement Test Review Guide

- Describe the levels of biological organization (biological hierarchy)
- Identify the most important elements in living organisms
- Describe the structure of atoms
    - On a periodic table of the elements be able to identify atomic symbols, atomic number and atomic mass and relate to number of protons, neutrons and electrons and energy levels
- Differentiate between atoms, molecules, and compounds
- Differentiate between organic and inorganic compounds
- Compare and contrast the different types of bonds (ionic, covalent, polar, and hydrogen)
- Identify parts of a chemical reaction
- Describe solutions, solvents, and solutes- examples
- Describe acids, bases and the pH scale
- Compare and contrast the structures and functions of the four classes of biological molecules
    - Explain the relationship between monomers and polymers
- Differentiate between prokaryotes and eukaryotes
- Describe the properties of a cell
    - Properties of plasma membranes (exs of terms that would be useful to know: selective permeability, osmosis, active and passive transport, diffusion, isotonic, hypotonic, hypertonic)
    - Explain how the chemical structure of phospholipids enables them to form a bilayer in water: hydrophilic, hydrophobic
- Identify the components common to all cells
- Identify the functions of the organelles in eukaryotic cells
- Energy- identify examples of how the body uses energy
- Differentiate between anabolic and catabolic metabolic processes
- Explain how ATP is used
- Explain how enzymes catalyze reactions
- How are enzymes named? ex: usually end in *–ase*
- Explain how cells use energy in food to produce ATP
- Know the basic formula for cellular respiration
    - Compare and contrast the events of glycolysis, (the prep step), the Krebs cycle, and the electron transport chain
    - Explain the role of O2/CO2 in respiration.

    - Calculate the net ATP produced in each step of aerobic metabolism
- Define homeostasis
- Identify the components/structure of double-stranded DNA
- Describe the events in transcription and translation
    - Explain the roles of DNA, RNA, and proteins
    - Use a template strand of nucleotides to create a complementary strand.
- Compare and contrast mitosis and meiosis
    - Diagram the steps in mitosis and meiosis
    - Differentiate between haploid and diploid cells.
    - Label a diagram of a chromosome (ex of terms: chromatin, sister chromatids, centromere)
- Describe the steps of DNA replication
    - Explain what features of DNA allow semiconservative replication to occur
- Patterns of inheritance: homozygous vs heterozygous, autosomes vs sex chromosomes

You should work through these topics with a high school level biology book. This basic biology course information can be found in the CCTC library in the following textbooks: *Biology Now, Custom Edition-Introductory Biology, Norton or Norton's Biology Now, Core Edition* can be used. *Introductory Biology, Hoefnagels; McGraw-Hill can also be used as a resource*. These book can be obtained from other students or from a variety of websites where they will be available. While any high school level biology book will cover basically all of the same material, the Biology course outline and objectives will most closely follow the Norton or Hoefnagels textbooks. If you have any specific questions, please send an email to Sena Gibson, Science Department Chair at gibsontp@cctech.edu.

About the Test

The Biology placement test is composed of 50 multiple choice questions and you will have 60 minutes to complete and submit the test. You are only allowed **one** attempt at this test so make sure you are prepared! When you have finished the test you will receive your results immediately. Below are some sample questions to help you prepare for this test. These questions are meant to be representative of the type of questions you might encounter on this test. The answers to these questions are provided at the bottom of the page.

1. Which of the following pH levels would represent a weak base?
A) pH = 3
B) pH = 6
C) pH = 8
D) pH =10

2. A polysaccharide is a long chain of ____.
A) proteins
B) nucleic acids
C) lipids
D) carbohydrates

3. Magnesium has 12 protons. How many electrons are in its second energy level?
A) 2
B) 6
C) 8
D) 10

4. What type of ion is formed when an atom gains an electron?
A) anion
B) cation
C) either cation or anion
D) neutral

5. Special catalytic molecules called ____ control chemical reactions in the human body.
A) cytochromes
B) cytozymes
C) enzymes
D) nucleic acids

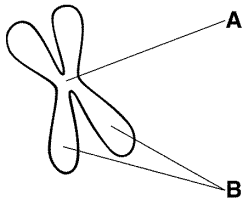
6. The most important metabolic fuel in the body is ____.
A) caffeine
B) glucose
C) oxygen
D) protein

7. Organisms that have two identical alleles for a particular trait are said to be ___
A) dominant
B) recessive
C) heterozygous
D) homozygous

8. Some cells contain large numbers of mitochondria while others have relatively few or none. This suggests that ____.
A) cells with large numbers of mitochondria are short-lived
B) cells with large numbers of mitochondria have high energy demand
C) cells with small numbers of mitochondria have a large ATP supply
D) cells with large numbers of mitochondria have low energy demand

9. Which of the following represent the phase of mitosis in their proper sequence?
A) metaphase, anaphase, interphase, telophase
B) prophase, metaphase, anaphase, telophase
C) prophase, metaphase, interphase, telophase, anaphase
D) interphase, prophase, metaphase, anaphase, telophase

10. The structure labeled **A** in the figure to the right is called the ___.
A) centromere
B) centriole
C) sister chromatid
D) spindle



Answers: 1 (C), 2 (D), 3 (C), 4 (A), 5 (C), 6 (B), 7 (D), 8 (B), 9 (B), 10 (A)