

Name: _____ Spring 2021

BIOLOGY 217 – HUMAN ANATOMY & PHYSIOLOGY I

TEST 1

Note: Remember that spelling counts. Answers must use correct medical terminology whenever applicable. Good luck.

- (1) Describe the anatomical position and its importance in the study of anatomy.
- (2) List the levels of organization in order beginning with most complex to least complex.
- (3) Identify the following organ system that best fits each description below.
- a) synthesizes vitamin D, prevents water loss, and regulates body temperature
 - b) site for hemopoieses, provides support and protection, and stores calcium and phosphorous
 - c) mechanically and chemically breaks down food materials, absorbs nutrients, and expels waste products.
- (4) List the major features of the following organ systems.
- a) respiratory system
 - b) cardiovascular system
 - c) endocrine system
- (5) Explain what positive feedback is and give an example in the human body to explain it.

(6) Use the correct directional term to complete the following statements.

- a) The head is _____ to the pelvis.
- b) The elbow is _____ to the wrist.
- c) The sternum is _____ to the spine.

(7) Why is it improper to say that the term homeostasis is the exact same meaning as equilibrium?

(8) What form of energy is found in the food that we eat?

(9) Give the symbols of the elements that match the following descriptions.

- a) _____ present in bone and is also an important cofactor in metabolic reactions
- b) _____ this element is the largest in quantity in the human body
- c) _____ found as a salt in bones and teeth
- d) _____ a major component in hemoglobin and some enzymes
- e) _____ a component of proteins, specifically muscle proteins.

(10) What is an orbital?

(11) Explain the difference in the two terms: *atomic mass* and *atomic weight*.

(12) True or False: Cytosol is an example of a colloid found in living cells.

(13) What does it mean for a molecule to be polar or nonpolar?

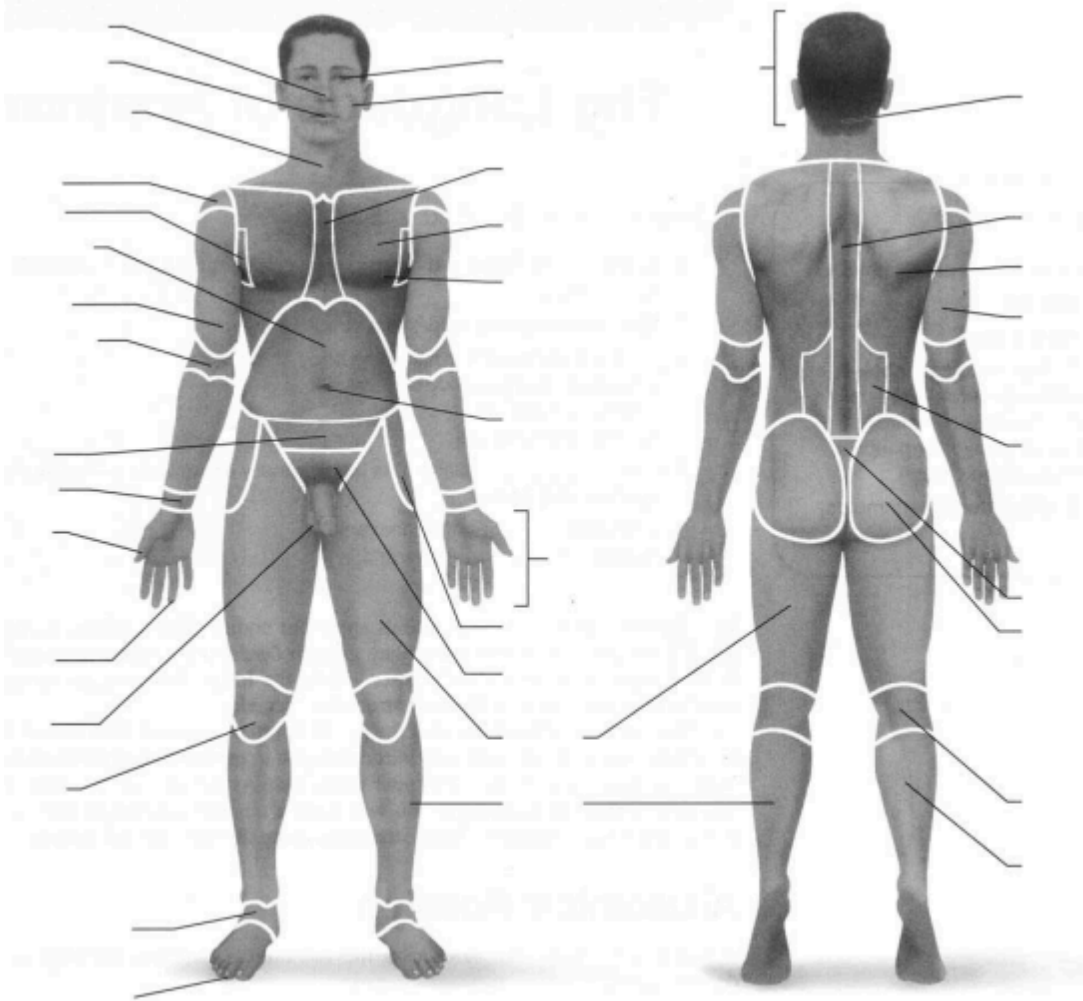
(14) What is the general form of a synthesis reaction?

(15) What is the general form of a decomposition reaction?

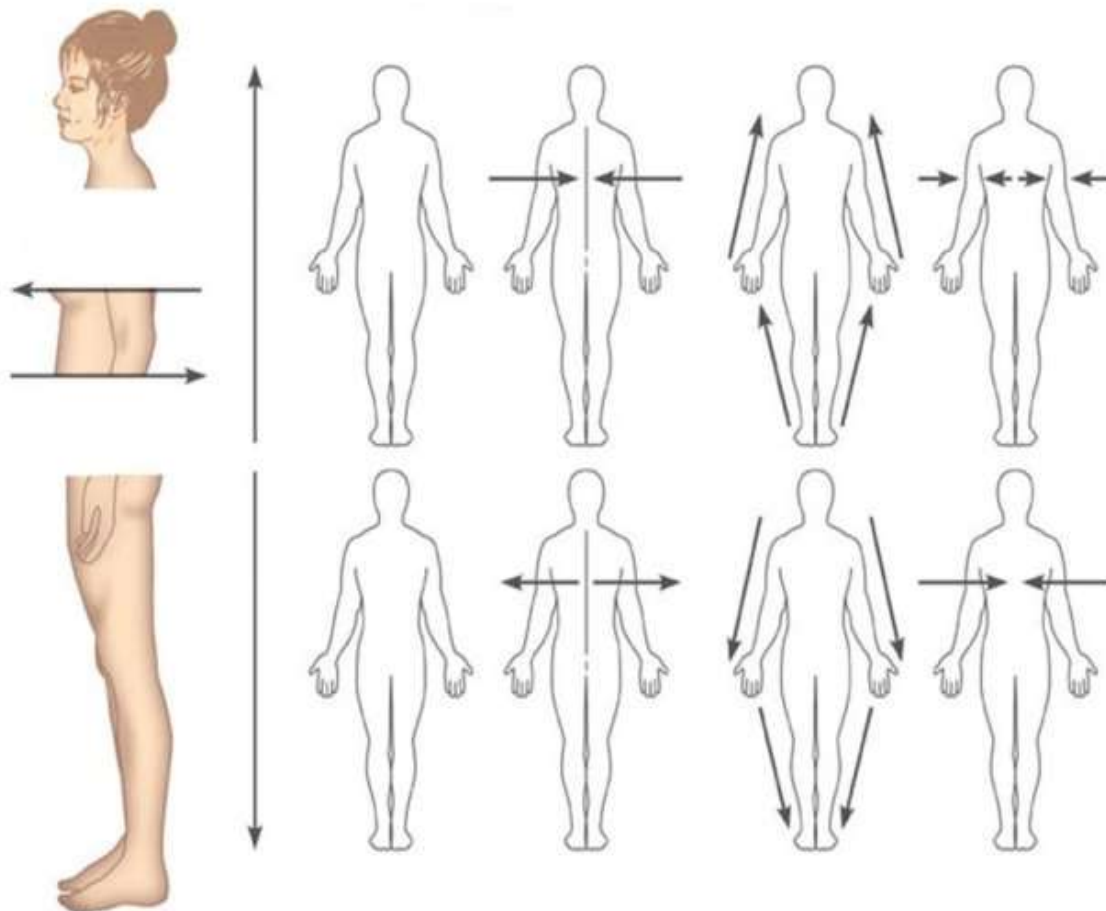
(16) _____ are groups of molecules that are composed of sugars and starches and make up 1-2% of the cell mass.

(17) List the three type of carbohydrates.

(18) Label all of the parts on the following diagram below.



(19) Label the following directional terms represented by each figure below.

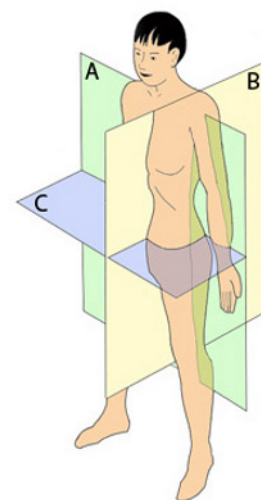


(20) Label the three anatomical planes represented on the figure to the right.

A _____

B _____

C _____



(21) What are the four major forms of energy? Briefly describe them.

(22) Give the symbol for each of the following biologically important elements.

____ Iron	____ Oxygen	____ Potassium
____ Chlorine	____ Magnesium	____ Sodium

(23) Write chemical symbol(s) that following descriptions below. Some may have more than one answer.

_____ found as a salt in bones and teeth
_____ essential cations in muscle contraction
_____ essential for production of thyroid hormones
_____ most abundant negative ion in extracellular fluid
_____ essential for transport of oxygen in red blood cells

(24) Generally, in chemistry, _____ function as proton (H⁺) donors.

(25) True or False: Omega-3 fatty acids decrease the risk of human heart disease.

(26) An element has a mass of 207 and has 125 neutrons in its nucleus. How many protons and electrons does it have and where are they located?

(27) Using key choices below, identify the body cavity where the following organs are located.

A. Abdominopelvic	B. Cranial	C. Spinal	D. Thoracic
____ stomach	____ liver	____ lungs	
____ small intestine	____ spinal cord	____ heart	

(28) Identify the following serous membranes.

Covers the lungs and cavity of the thorax	_____
Forms a slippery sac around the heart	_____
Surrounds the abdominopelvic cavity organs	_____

(29) Why is the type of feedback that maintains homeostasis considered negative feedback?

(30) Place an X to designate which of the following are organic compounds.

____ carbon dioxide	____ fats	____ proteins	____ KCl
____ water	____ DNA	____ glucose	____ oxygen

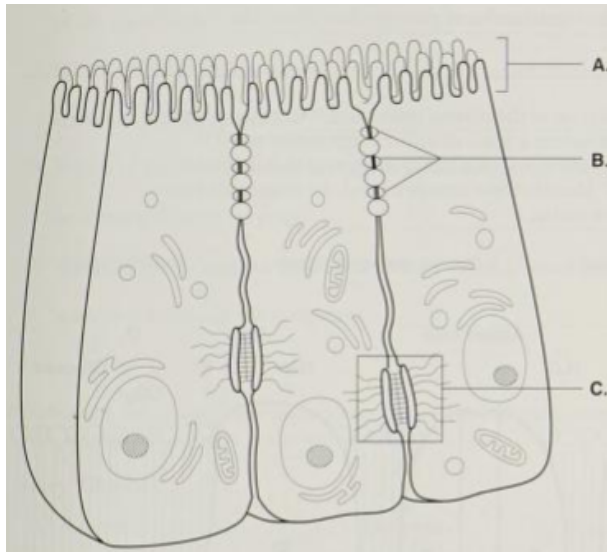
(31) What are four factors that influence the speed of a chemical reaction?

- (32) Atom X has 17 protons. How many electrons are in its valence shell? _____
- (33) Which type of proteins are vitally important to cell function in all types of stressful circumstances?
- (34) Amino acids joining together to make a peptide is a good example of what kind of reaction?
- (35) Draw the structure of sucrose.
- (36) What does the polar end of a phospholipid contain?
- (37) Explain why chemical reactions in the body are often irreversible.
- (38) A chemical bond never occurs between components of a mixture. Explain this.
- (39) Mrs. Mulligan goes to her dentist and, after having a couple of cavities filled, her dentist strongly suggest that she reduce her intake of sodas and increase her intake of calcium phosphates in the food that she eats. Why?

(40) A 23-year-old male was riding his road bike in 100-degree heat, when he suddenly became nauseated and weak. He called 911 from his cell phone. When the ambulance came, the paramedics started intravenous therapy for severe dehydration. Explain the critical role of water in the human body to maintain homeostasis.

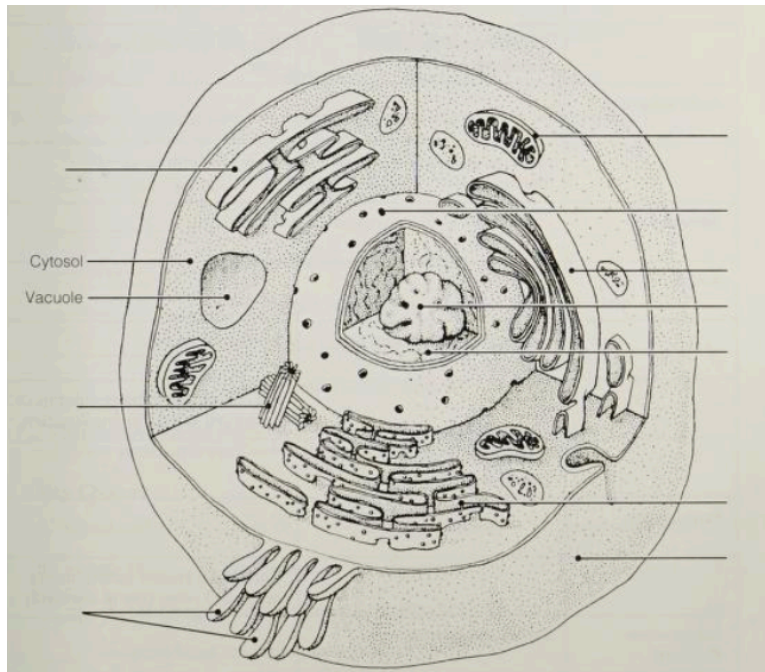
(41) What are the four concepts of the cell theory? List them.

(42) Label the specializations of the plasma membrane shown below.



(43) What does isotonic mean?

(44) Label the cell parts indicated in the figure below.



(45) Describe the components and importance of the endomembrane system.

(46) Anaphylaxis is a systemic allergic reaction in which capillaries become excessively permeable. This results in increased filtration and fluid accumulation in the tissues, leading to edema. Why is this condition life-threatening even if no frank bleeding occurs?

(47) Consider the chemistry of the plasma membrane. Why is minor damage to this membrane usually not a problem?

(48) What is the physical advantage of the chromatin coiling and condensing to form short chromosomes at the onset of mitosis?

(49) What are the four stages of mitosis in the correct order?

(50) Discuss the functions of the plasmalemma.

(51) Discuss the differences between transcription and translation.

(52) Small pieces of matter, and even whole cells, can be transported across the plasma membrane in _____.

(53) True or False: Chromatin condenses into chromosomes in telophase.

(54) A bullet enters the left side of a man, passes through the left lung, and lodges in the heart. Name in order the serous membranes and their cavities through which the bullet passes.

(55) True or False: Lipids are a poor source of stored energy.

(56) How does Alka Seltzer act as a buffer in the stomach?

(57) If you are given 100 ml of 0.1 M HCl, how much of a 0.01 M solution of NaOH would be required to completely neutralize this solution? Show your work.

(58) A student has a 1 liter flask containing 50 ml of 0.1 M KCl. The student is told to prepare 0.01 M KCl. How much water should the student add to the flask? Show your work.