

Discovery Question for Biology 109

Chapter 2 Chemistry (p.38-48)

Discovery questions/terms:

1. What is an element?
2. What are three subatomic particles that compose atoms? Where is each found in the atom? What are the charges and AMU of each?
3. What is atomic number?
4. What is atomic weight (mass)? How do you calculate atomic weight (mass)?
5. What are the abbreviations for hydrogen, carbon, nitrogen, oxygen, calcium, phosphorous, chlorine, sodium, and potassium?
6. Reference Appendix A and find the atomic weight (mass) and atomic number for each of the elements in #5. (You do not have to memorize these, this is just to make sure you understand it).
7. Which four elements make up most of the human body (in order)?
8. What is a molecule? Know how to read a molecular formula.
9. What is an isotope? How are they used in medicine?
10. What is a chemical bond?
11. What is the difference between a covalent and ionic bond? What is an ion? What is a cation and an anion?

Chapter 3. Organelles. Warning! Just studying these answers does not mean that you will understand this information. You are responsible for reading the textbook and understanding the functions and composition of each organelle listed below.

Answers to the blanks below. Each answer can only be used once.

cytoplasm cytoskeleton rough endoplasmic reticulum smooth endoplasmic reticulum

ribosome golgi apparatus mitochondria lysosomes peroxisomes

centrioles cilia flagella vesicles

1. The _____ is the organelle that provides the physical location for protein synthesis.

* name two locations that these organelles can be found in the cell.

a.

b.

2. The _____ is a large membraneous organelle, composed of lipids, that receives vesicles carrying proteins from the rough endoplasmic reticulum. Here the proteins are further modified and transported outside the cell by secretory _____.

3. _____ are found in every cell, but are most abundant in liver and kidney cells. These small sacs contain over 40 enzymes that detoxify H_2O_2 , alcohol, and other toxins.

4. _____ are the “garbage disposals” of the cell. These sacs contain 40 or more enzymes that digest molecules found on foreign cells or old worn-out organelles.

*Reading the clinical application, which disease is caused by a malfunctioning lysosome. Is this disease genetic? What causes the malfunction in the lysosome?

5. The _____ is the mass of fluid that is found inside the cell membrane and around the nucleus.

6. The _____ is an organelle that composed of a lipid membrane and is primarily responsible for the synthesis of lipids: steroids, triglycerids, and phospholipids.

7. The _____ is an organelle that is composed of a lipid

membrane which is embedded with ribosomes. This is responsible for modifying proteins already constructed by other organelles and then transporting them to the golgi apparatus.

8. The _____ are organelles that have a double layered lipid membrane, contains its own DNA, and is used to generate ATP (cellular energy) when O₂ is present within the cell.

9. The _____ are organelles only used during cell division and create spindles that are helpful in moving and organizing chromosomes.

10. _____ are long, whip-like tails that help move a sperm cell.
*also composed of microtubules

11. _____ are shorter than #10, but are very numerous. These filaments are used to move fluids along a tissue's surface.
*also composed of microtubules

12. The _____ is built from microtubules and provides structure and support to the cell (cytoplasm).

Refer to the drawing given to you by your instructor. Use the drawing to determine which organelle is listed.

A. _____

B. _____

C. _____

D. _____

E. _____

F. _____

G. _____

H. _____

I. _____

J. _____

K. _____

L. _____

Substrate + Enzyme → Enzyme-Substrate complex → Enzyme + Product

a. Give one real example of a chemical reaction that occurs within the body that follows the above equation.

b. Why is the “enzyme-substrate complex” so important?

8. Referring to question 7, is the enzyme used up? Why is this important to cells?

9. How are enzymes named? Give one example.

10. Why are cofactors (which are minerals) and coenzymes (which are some types of vitamins) important to the functioning of a normal metabolism?

11. Inhibitors are molecule that block the active site of enzymes. Many types of toxins are inhibitors. What would an inhibitor do to normal metabolism?

12. Name at least four factors (beside inhibitors) that can permanently alter (denature) enzymes.

Reading Assignment
Chapter 8- Joints (p.276-278 & 290-292)

Discovery questions/terms:

1. Define each of these terms and be able to give one example. *Words are grouped as opposites.

Flexion, extension, hyperextension-

Dorsiflexion, plantarflexion-

Abduction, adduction-

Rotation-

Circumduction-

Supination, pronation-

Elevation, depression-

2. Define/describe each of the following joint disorders:

Sprain-

Bursitis-

Rheumatoid Arthritis-

Osteoarthritis-

Gout-

Reading Assignment
Chapter 11

Discovery Questions

1. On the spinal cord, what is the cervical enlargement?

2. On the spinal cord, what is the lumbar enlargement?

3. Explain where the gray and white matter is found in a cross section of the spinal cord.

4. What function does the gray matter have in the spinal cord?

5. What are ascending and descending tracts of the spinal cord and what function do they have? Are they composed of white or gray matter and why?

6. Where is the central canal located? What is found in the central canal? What type of NS cell lines the central canal?

7. What is a reflex? Give at least five examples of reflexes in the body.

8. Explain the structure of a reflex arc. Why are reflex arcs so simple in composition?

