

Name: _____ Date: _____ Hour: _____

Biology Midterm Exam Study Guide 2019 Midterm Exam Date = _____



An entire semester is just about done. So, what did you learn? What did you struggle with? No one has unlimited time, so knowing the answer to these questions is necessary to study efficiently and be successful.



To organize studying for the midterm exam, key things to know are listed according to the units we studied. **YOUR GOAL IS TO MAKE A STUDY PACKET, INSTEAD OF TRYING TO USE ALL 100+ PAGES FROM THIS SEMESTER.** Look for notes, reviews, flashcards, or whatever you find helpful in reviewing biology material.



It is better to practice a few terms or concepts for a few nights than try to cram everything in one night. You **CANNOT** simply look at or read this over a few times and assume you will "remember it and do OK." **REMEMBER**, your time should be spent studying the things that you struggled with. If you don't understand some of those things; **it is up to YOU to ask questions and get the help you need.**



Your unit test reviews will be helpful in completing this review.

Unit 1: Living Systems

- Organization of the Biosphere
- Living vs. non-living systems
- Cell types
- Cell Organelles and parts
- Body systems
- Tissues and Organs
- Characteristics of Life
- Homeostasis (Blood glucose, Body temperature, Blood pH)

Unit 2: Chemistry in Living Systems

- Key characteristics of carbon
- Hydrolysis & dehydration synthesis - which builds, which takes apart; which makes water, which requires water
- Four biomolecules: proteins, lipids, carbohydrates, and nucleic acids. You need to know the monomer, structure, examples/types, and functions of each.
- Function/Structure of the cell membrane
- Osmosis - determine and explain the direction of water flow
- Difference between active & passive transport

FINALLY, SOME ENCOURAGING WORDS ☺ You will have 2 hours to complete the exam, but most people will finish with time left over. **NONE** of the questions are designed to be tricky! The biology teachers have read and re-read the questions to try to make sure the exam is fair and understandable. Now it is time for **YOU** to put in the time to study effectively. If you know and understand the topics listed on this sheet, as well as the practice on the review, you **WILL** be successful on the exam.

Answer the following questions to help you prepare for your midterm exam.

Unit 1: Living Systems

1. List and describe the five Characteristics of Life.
2. How are open and closed systems different? Give an example of each.

3. How would you describe if something is living or not?

4. Describe the difference between biotic and abiotic. Give an example of each.

5. Match each organelle with the correct function.

- | | |
|--------------------------------|--|
| a. _____ Nucleus | A. The site of protein synthesis (where proteins are made) |
| b. _____ Cell Wall | B. Packages and distributes proteins |
| c. _____ Ribosome | C. Provides structure and support for the cell |
| d. _____ Chloroplast | D. Hold all organelles in place, chemical reactions occur here |
| e. _____ Vacuole | E. Converts solar energy into chemical energy |
| f. _____ Mitochondria | F. Produces ATP from glucose |
| g. _____ Golgi Apparatus | G. Contains DNA, control center of the cell |
| h. _____ Cell Membrane | H. Stores materials in the cell, especially water in plants |
| i. _____ Cytoplasm | I. Controls what enters and exits the cell |
| j. _____ Endoplasmic Reticulum | J. Makes lipids for the cell and modifies proteins |

6. What are the major differences between plant cells and animal cells? What organelles are present in each that may not be present in the other?

7. What is the difference between a prokaryotic cell and a eukaryotic cell? Complete the table below to help your thinking.

TYPE OF CELL	HAS A NUCLEUS? YES OR NO	HAS ORGANELLES? YES OR NO	HAS DNA? YES OR NO LOCATION?	HAS A CELL MEMBRANE & CYTOPLASM?	EXAMPLES
EUKARYOTIC					
PROKARYOTIC					

8. List 5 additional facts for eukaryotic cells that are not in the chart above.

9. List 5 additional facts for prokaryotic cells that are not in the chart above.

10. List and describe the organization of the Earth System.

11. Name and describe the three subsystems of the Earth.

12. List the levels of organization in an organism from smallest to largest. Define each term.

13. Define cell differentiation.

14. Describe the function of a neuron

15. Draw and label a neuron.

16. List and describe the four types of tissues.

17. Fill in the chart for the body systems.

<u>Body System</u>	<u>Function</u>	<u>Major Structures</u>
Circulatory		
Digestive		
Endocrine		
Excretory		

Immune		
Integumentary		
Muscular		
Nervous		
Reproductive		
Respiratory		
Skeletal		

18. Define the following terms:

a. Behavioral response

b. Regulatory response

c. Equilibrium

d. Homeostasis

19. When you exercise does blood pH increase or decrease? _____ Why ? _____

20. What is the primary molecule that impacts blood pH? _____

21. Fill in the following chart:

	Body Temperature	Blood Sugar	Blood pH
Normal Set Point			
What causes it to increase?			
What causes it to decrease?			
Regulatory response(s) to below set point (List and explain or define)	1. 2. 3. 4.	1. 	1.
Regulatory response(s) to above set point	1. 2.	1. 	
Possible disease if homeostasis is disrupted	1. 2.	1. 2.	1. 2.

Unit 2: Biochemistry

1. What is the most important element in biochemistry?
2. Define dehydration synthesis. Does it build or break down molecules? Are bonds made or broken? Is water added or removed?
3. Define hydrolysis. Does it build or break down molecules? Are bonds made or broken? Is water added or removed?
4. What is an enzyme? What does it do in chemical reactions?
5. Fill in the following chart:

Organic Molecule	Monomer	Function	Structure	Examples
Carbohydrate				
Lipid				
Protein				
Nucleic Acid				

6. What type of bond stores energy? How is this related to why a lipid stores more energy than a carbohydrate.
7. A protein's function depends on its _____. It must _____ before it will function correctly.

8. What is a hormone?

9. Be able to recognize a diagram of a carbohydrate, lipid, protein and nucleic acid, including labeling all of their parts. Draw them here to help with your studying.

10. Think back to the murder mystery lab. What types of foods would be high in carbohydrates?

Which would be high in proteins? _____

Which would be high in fats? _____

11. Fill in the following chart:

Type of Transport	Substance Movement (High to Low or Low to High)	Energy Needed?	Examples
Passive			
Active			There are no examples!

12. What makes up the cell membrane?

13. Describe how substances are moved in diffusion.

14. What is special about osmosis?

15. The cell membrane is semipermeable. What does this mean?

16. Describe/draw the structure of a phospholipid.