

Midterm Exam Study Guide
Biology, Fall 2019

Unit 1: Matter and Energy

1. What is a molecule?
2. What are the four main macromolecules used by living things?
3. What elements (atoms) are common to all four macromolecules?
4. What are the building blocks (the smaller molecules) that are put together to make each of the main macromolecules?
5. What is the main function of each macromolecule?
6. What is the structural difference between a saturated fat and a non-saturated fat?
7. Be able to explain the evidence and reasoning used to answer the student athlete prompt from class.
8. What is a chemical reaction?
9. On which side of a chemical reaction formula would you find the reactants?
10. On which side of a chemical reaction formula would you find the products?
11. Be able to balance a chemical equation.
12. Explain what forming bonds has to do with energy.
13. Explain what breaking bonds has to do with energy.
14. What is dehydration synthesis?
15. What is hydrolysis?
16. What are the reactants and products of photosynthesis?
17. What are the reactants and products of cellular respiration?
18. Why are photosynthesis and cellular respiration considered to be part of a cycle?
19. What is ATP?
20. What types of organisms do photosynthesis?
21. What types of organisms do cellular respiration?
22. If plants can make their own glucose, why do they need to go through cellular respiration as well?
23. Why is life carbon-based?
24. How is chemical energy stored and released in living things?
25. How do plants convert energy to mass?
26. What is a balanced ecosystem?
27. How does the cycling of carbon help to keep an ecosystem balanced?
28. In an ecosystem, what are biotic and abiotic factors?
29. What are producers, consumers, and decomposers? What role do they play in a balanced ecosystem?
30. Be able to draw and/or analyze a food web in an ecosystem.

Unit 2: Systems Dynamics

31. What is a system, and what is necessary for a system to work properly?
32. What is negative and positive feedback?
33. What is homeostasis?
34. How does feedback within a system contribute to homeostasis?
35. Explain homeostasis in terms of blood pressure, blood-glucose levels, and thermoregulation.
36. Explain the circulatory system and how it maintains homeostasis in the human body.
37. Be able to analyze population growth graphs and explain in detail what is happening to a population over time.
38. What is carrying capacity and what determines it?
39. When is a population sustainable?
40. Explain the effects of competition, predator-prey relationships, and symbiosis on the growth of a population.
41. Describe the different types of symbiosis.
42. What is a trophic cascade?
43. Explain the details of the trophic cascade seen in Yellowstone National Park.

Be able to properly CLOSE READ and ANNOTATE an article.

Key Vocabulary

element

molecule

macromolecule

carbohydrate

protein

lipid

nucleic acid

monosaccharide

polysaccharide

amino acid

nucleotide

chemical reaction

reactant

product

photosynthesis

cellular respiration

glucose

ATP

dehydration synthesis

hydrolysis

ecosystem

biotic

abiotic

sustainable

food web

producer

consumer

decomposer

system

feedback

homeostasis

population

exponential growth

logistic growth

sustainable

carrying capacity

resources

ecological relationship

symbiosis

mutualism

parasitism

commensalism

predator-prey

trophic cascade