UNIT 2 ASSIGNMENTS:

*After reading the following chapters, answer the questions in **complete sentences** on your own sheet of paper IN YOUR OWN WORDS. Do not copy statements directly from the book.*

UNIT 2 EXAM: A-DAY 9/19   B-DAY 9/20

Chapter 4 Questions: DUE: A-day 9/5   B-day 9/6

1. What are the basic building blocks of matter?
2. Provide examples using chemicals common in living organisms.
3. Name four ways in which the chemical nature of the water molecule facilitates life.
4. What are the three classes of biological polymer?
5. What are their functions?
6. Describe the two major forms of energy, and give examples of each.
7. State the first law of thermodynamics.
8. Describe two of its implications.
9. What is the second law of thermodynamics?
10. How might it affect our interactions with the environment?
11. Describe two major sources of energy that power the Earth's environmental system.
12. What substances are produced by photosynthesis?
13. What substances are produced by cellular respiration?
14. What substances are produced by chemosynthesis?
15. Compare and contrast three competing hypotheses for the origin of life.
16. Name three things scientists have learned from the fossil record.
17. Under what types of conditions might bioremediation be a successful strategy?
18. Describe an example of energy transformation from one from to another.
19. Give 3 examples of ways in which the input of energy can resist the tendency toward disorder that the second law of thermodynamics describes.

Chapter 7 (pg 173-197) Questions: DUE A-day 9/11   B-day 9/12

1. Which type of feedback loop is most common in nature?
2. Which more commonly results from human action?
3. How might the emergence of a positive feedback loop affect a system in homeostasis?
4. Describe how hypoxic conditions can develop in coastal marine ecosystems such as the northern Gulf of Mexico.
5. What is the difference between an ecosystem and a community?
6. Describe the typical movement of energy through an ecosystem.
7. Describe the typical movement of matter through an ecosystem.
8. What type of role does each of the following play in the carbon cycle?
    a. Cars
    b. Photosynthesis
    c. The oceans
    d. Earth's crust
9. Contrast the function performed by nitrogen-fixing bacteria with that performed by denitrifying bacteria.
10. How has human activity altered the carbon cycle?
11. How has human activity altered the phosphorus cycle?
12. How has human activity altered the nitrogen cycle?
13. To what environmental problems have these changes given rise?
14. What is the difference between evaporation and transpiration?
15. Give 2 examples of how the hydrologic cycle interacts with the carbon cycle.
16. Give 2 examples of how the hydrologic cycle interacts with the phosphorus cycle.
17. Give 2 examples of how the hydrologic cycle interacts with the nitrogen cycle.

FRQ: DUE A-day 9/13   B-day 9/16

Answer the questions below regarding the heating of a house in the Midwestern United States. Assume the following:

- The house has 2,000 square feet of living space.
- 80,000 BTUs of heat per square foot are required to heat the house for the winter.
- Natural gas is available at a cost of $5.00 per thousand cubic feet.
- One cubic foot of natural gas supplies 1,000 BTUs of heat energy.
- The furnace in the house is 80 percent efficient.

(a) Calculate the following, showing all the steps of your calculations, including units.

   (i) The number of cubic feet of natural gas required to heat the house for one winter.

   (ii) The cost of heating the house for one winter.

(b) Identify and describe three actions the residents of the house could take to conserve heat energy and lower the cost of heating the house. (*Give details for each action*)

(c) The residents decide to supplement the heating of the house by using a wood-burning stove. Discuss two environmental impacts, one positive and one negative, of using the wood-burning stove. (*Discuss means give at least 2 extra sentences of details!*)