Chapter 1 & 2 Review Questions + Problem Set

Directions- On loose-leaf paper, answer the following questions in well-written complete sentences. You do not need to write the question. Number each answer so the number corresponds the question that you have answered. **Only hand-written responses will be accepted. Typed or emailed copies will not be graded.**

Chapter 1 Review Questions

1. Define natural capital, natural resources, and natural services.
2. What is environmental degradation?
3. Distinguish between a perpetual resource and a renewable resource and give an example of each.
4. What is sustainable yield?
5. Define and give two example of a nonrenewable resource.
6. Define and give three examples of environmental degradation (natural capital degradation).
7. What is pollution?
8. Distinguish between point source and nonpoint sources of pollution.
9. Distinguish between pollution cleanup (output pollution control) and pollution prevention (input pollution control) and give an example of each.

Chapter 2 Review Questions

10. Distinguish between an element and a compound and give an example of each.
11. Distinguish between a physical change and a chemical change (chemical reaction) and give an example of each.
12. What is the law of conservation of matter and why is it important?
13. Define and give two examples of electromagnetic radiation.
14. What are fossil fuels and what three fossil fuels do we use most?

Chapter 1 Problem Set

On loose-leaf paper, using the format modeled by your instructor, solve the following problems.
SHOW ALL OF YOUR WORK. MAKE IT LOOK BEAUTIFUL ☺

Complete the following conversions

1. 785.3 kilometers (km) to meters (m).
2. 68.2 milligrams (mg) to grams (g).
3. 8.26 kiloliters (kL) to milliliters (mL).
4. 0.0025 to scientific notation.
5. 9,790,000 to scientific notation.
6. 4.5×10^{7} to standard notation.
7. 1.2×10^{-4} to standard notation.

Complete the following calculations without a calculator & show all of your steps

8. $2.7 \times 10^{5}\ (0.5)=$
9. $7.5 \times 10^{8}\ (2.0 \times 10^{3})=$
10. $0.09 \div 0.27=$
11. $8.1 \times 10^{5} \div 1.35 \times 10^{5}=$

Complete the following dimensional analysis problems without a calculator. Include all units, cancel units, show all multiplication and division calculations, and record you answer to the nearest tenths.

12. 120 ounces to kilograms
13. 17 gallons to liters

Complete the following word problems without a calculator. Use dimensional analysis, include all units, cancel units, show all multiplication and division calculations, and record you answer to the nearest tenths or hundredths.

14. In 2006 the United States consumed 140.3 billion gallons of gasoline as motor fuel. The combustion of 1 gallon of gasoline produces 8.750 kg of CO_2. What were the total annual CO_2 emissions for United States motor fuel consumption in 2006? If the population at the time was 300 million, what was the per capita generation of auto CO_2 emissions for 2006?

15. In 2011 the United States consumed 18,840,000 barrels per day (bbl/day) of refined petroleum products. What was the average per capita consumption of refined petroleum products in gallons per day? (2011 U.S. population = 3.0×10^8 & 1 barrel of oil = 42 US gallons)

16. The combustion of one gallon of gasoline produces about 8.750 kg of CO_2. Two cars are making a trip of 600 miles. The first car's average fuel economy is 20 miles per gallon, and the second gets 30 miles per gallon. How much less CO_2 will be the second car produce on this trip?

17. Forests, and the trees that compose them, provide a vital ecosystem service by removing carbon dioxide from the atmosphere through photosynthesis and storing it in plant tissue. The U.S. Environmental Protection Agency has determined that 1,220 kg of CO_2 are stored in 1 acre of growing U.S. forest per year.

Use the data below to respond to the following.

1 acre of growing U.S. forest per year = 1,220 kg of CO_2
1 hectare = 2.5 acres
1 hectare = 10,000 m^2

Calculate the area, in square meters, of U.S. National Forest that would be required to absorb and store, for one year, the amount of carbon dioxide that is emitted when a car with an average fuel economy of 20 miles per gallon makes a 600-mile trip.

Chapter 2 Problem Set

18. Study Table 2-1 *Chemical Elements Used in This Book* on page 38.
19. Study Table 2-2 *Chemical Ions Used in This Book* on page 40.
20. Study Table 2-3 *Compounds Used in This Book* on page 40

Balance the following chemical equations and explain why each is relevant to environmental science.

21. $N_2 + O_2 \rightarrow N_2O$
22. $N_2 + H_2 \rightarrow NH_3$
23. $C_2H_6 + O_2 \rightarrow CO_2 + H_2O +$ Heat
24. $S + O_2 \rightarrow SO_3$