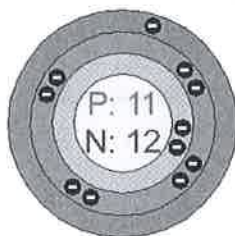


CHEMISTRY REVIEW

1. An atom has 19 protons and 20 neutrons. The number of electrons in this atom is
 - a. 1
 - b. 19
 - c. 20
 - d. 39
2. An atom has 19 protons. The identity of this atom is
 - a. Calcium
 - b. Magnesium
 - c. Potassium
 - d. Sodium

Use the following diagram to answer questions 3 and 4.



3. The element represented in the diagram above is
 - a. Aluminum
 - b. Fluorine
 - c. Lithium
 - d. Sodium
4. For a chlorine atom to become a chloride ion, the chlorine atom must
 - a. Gain one electron
 - b. Lose one electron
 - c. Share an electron
 - d. Lose all its electrons
5. Carbon bonds with hydrogen to obtain a full outer energy level by
 - a. Both carbon and hydrogen losing electrons
 - b. Both carbon and hydrogen sharing electrons
 - c. Carbon gaining electrons and hydrogen losing electrons
 - d. Carbon losing electrons and hydrogen gaining electrons
6. If we dissolve KoolAid in water, the KoolAid is considered to be the
 - a. Product
 - b. Solution
 - c. Solvent
 - d. Solute

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$$\text{ppm} = \frac{\text{mg}}{\text{kg}}$$

15. A 400g sample of water contains 4.50×10^{-5} g of arsenic. Calculate the concentration of arsenic in the water sample in parts per million.

- a. 0.869 ppm
- b. 1.13×10^{-7} ppm
- c. 8 695 652 ppm
- d. 0.113 ppm

$$\frac{4.5 \times 10^{-5} \text{ g}}{400 \text{ g}} = \frac{4.5 \times 10^{-2} \text{ mg}}{0.4 \text{ kg}} = 0.113 \text{ ppm}$$

(Note: $4.5 \times 10^{-5} \text{ g} \times 1000 = 4.5 \times 10^{-2} \text{ mg}$ and $400 \text{ g} \div 1000 = 0.4 \text{ kg}$)

16. You have 65.0mL of a 0.759 mol/L solution of $\text{NaCl}_{(aq)}$. Calculate the final concentration of the solution if it is diluted to a final volume of 100.00mL?

- a. 0.493 mol/L
- b. 49.335 mol/L
- c. 1.16 mol/L
- d. 85.64 mol/L

$$C_1 V_1 = C_2 V_2$$

$$(0.759 \text{ M})(65 \text{ mL}) = C_2 (100 \text{ mL})$$

$$C_2 = 0.4934 \text{ M}$$

17. You have 65.0L of a 0.759 mol/L solution of $\text{NaCl}_{(aq)}$. What would be the final volume of solution if you wanted to make it have a concentration of 0.200 mol/L?

- a. 247 L
- b. 182 L
- c. 17 L
- d. 48 L

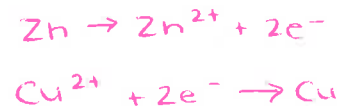
$$C_1 V_1 = C_2 V_2$$

$$(0.759 \text{ M})(65.0 \text{ L}) = (0.2 \text{ M}) V_2$$

$$V_2 = 246.68 \text{ L}$$

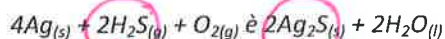
18. What happens when a strip of zinc is placed in a copper (II) nitrate solution?

- a. Hydrogen bubbles form on the strip of zinc, and zinc ions go into the solution.
- b. Zinc ions go into the solution, and copper forms on the strip of zinc.
- c. A chemical reaction involving the zinc does not take place.
- d. Zinc goes into the solution, and oxygen forms.



19. Based on the equation below, what is the mole ratio of $\text{H}_2\text{S}_{(g)}$ and $\text{Ag}_2\text{S}_{(s)}$?

- a. 2:1
- b. 2:2
- c. 2:4
- d. 4:2



20. In producing pure iron metal from its ore, iron (III) oxide and carbon (coke) must react according to the following balanced chemical equation:



Suppose 5.89×10^3 mol of iron ore are consumed. How many moles of pure iron metal are produced?

- a. 1.47×10^3 mol
- b. 2.95×10^3 mol
- c. 5.89×10^3 mol
- d. 1.18×10^4 mol

$$\# \text{ mol Fe} = 5.89 \times 10^3 \text{ mol} \times \frac{2 \text{ Fe}}{1 \text{ Fe}_2\text{O}_3}$$

$$= 11780.0 \text{ mol Fe}$$

Use the following information to answer the next question.

The ecologist analyzes a sample of soil.

Characteristics of Soil

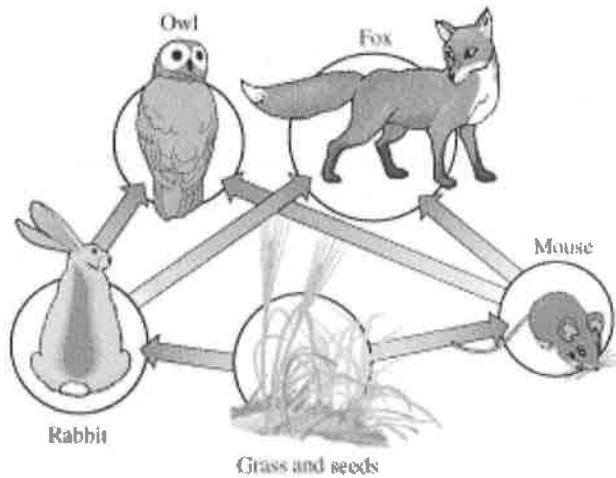
- I. pH
- II. Nutrient content
- III. Moisture content
- IV. Bacteria populations present

1. The characteristics of soil listed above that are abiotic factors of an ecosystem are

- A. I and IV
- B. I, II, and III
- C. II and IV
- D. III and IV

Use the following diagram to answer the next question.

Based on observations of the organisms present in an ecosystem, the ecologist constructs the food web depicted below.



2. The relationship between a rabbit and a mouse living within the food web shown above is called

- A. predation
- B. symbiosis
- C. parasitism
- D. competition

both eat grass.

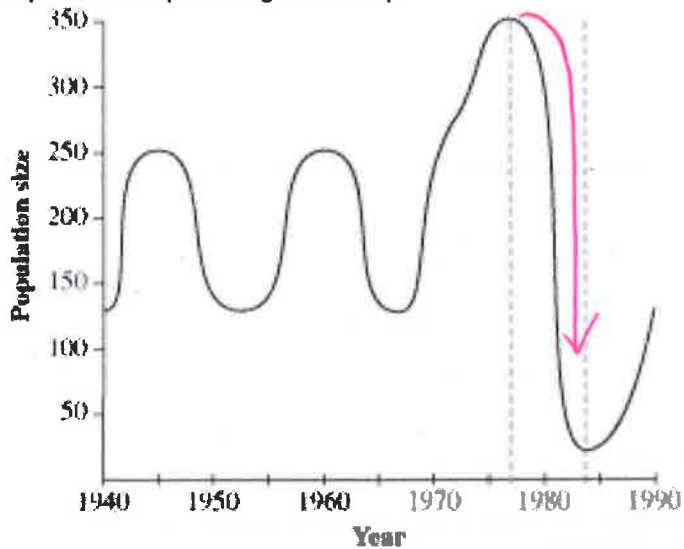
D.	4	2
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5. The sequence for the transfer of energy through the trophic levels indicated in the pyramid above is

- A. 1, 2, 3, 4
- B. 2, 3, 4, 1
- C. 3, 1, 4, 2
- D. 4, 3, 2, 1**

Use the following information to answer the next question.

Population Graph for Bighorn Sheep



Factors That Influence the Population Size of Bighorn Sheep Within an Ecosystem

- 1.** Disease affecting bighorn sheep
- 2.** Increase in wolf population
- 3.** Increased parasitism of wolves
- 4.** Habitat destruction
- 5.** Drought
- 6. Immigration of bighorn sheep from neighbouring ecosystems
- 7. Increase in survival rate of young bighorn sheep

NR2 Four factors listed above that could have caused the population change between 1977 and 1984 shown on the graph are 1, 2, 4, and 5.

(Record all **four digits** of your answer in the numerical-response section on the answer sheet.)

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Use the following information to answer the next question.

Descriptions

- A group of peppered moths that includes individuals that are coloured
1. black, grey, or white
 2. A litter of kittens that have black fur
 3. A lamb that is a clone of an adult sheep
 4. A group of finches that have different beak lengths
 5. The seeds from one sunflower plant that germinate earlier than the seeds from another sunflower plant

NR 4. The three descriptions above that demonstrate variation of a trait within a population of organisms of the same species are 1, 4, and 5.

(Record all **three digits** of your answer in the numerical-response section on the answer sheet.)