

Final Exam Review

Study Tips:

- ✓ Study! It is your best chance for success.
- ✓ Try to understand concepts, not just memorize them.
- ✓ Don't leave studying to the last minute. Spend 1 - 2 hours each night a week before the exam.
- ✓ Try to keep a regular sleep pattern. You will do better if you are more alert.

Where should I start . . .

- read through your notes.
- try to answer the questions on the unit reviews.
- try to answer the questions on the unit tests and quizzes.
- complete the final exam review.

Chemistry Review

1. What are the five points of the Particle Theory of Matter?
2. Define the following terms:

a. heterogeneous	b. homogeneous
c. mixtures	d. pure substances
e. mechanical mixtures	f. solutions
g. elements	h. compounds
3. Determine whether the following are elements (E), compounds (C), solutions (S), or mechanical mixtures (MM).

a. ocean water	b. kool-aid
c. clean air	d. lemonade
e. oil and vinegar	f. carbon
g. lithium chloride	h. carbon dioxide
4. How can you differentiate between a physical and chemical change? What are the five signs that a chemical change has occurred?
5. Identify each of the following as physical(P) or chemical changes(C).
 - a. ink from a pen dries on paper
 - b. a cake is baked in an oven
 - c. potatoes are boiled in water for 20 minutes
 - d. vinegar is poured into a metal pail and the pail corrodes
 - e. a tree is chopped into firewood
 - f. silverware gets darker after using it to eat eggs
 - g. a bottle of pop is opened and bubbles are produced by the liquid
 - h. Shredding a piece of paper.
 - i. Silver tarnishes over time when it is exposed to air.
 - j. When baking soda and vinegar is mixed, the mixture "fizzes".
 - k. A marshmallow is toasted over a bonfire.
 - l. Water vapour in the atmosphere cools and condenses to form a cloud.
6. What is a physical property? Differentiate between quantitative and qualitative physical properties.
7. What is a chemical property?

8. We did gas tests to determine what a sample of unknown gas was. What are the tests and the results of the three tests? What are some properties that help us differentiate between hydrogen, oxygen, and carbon dioxide?
9. What is the smallest part of a compound called? What is the smallest part of an element called?
10. How many atoms are found in the following compounds?
 - a. 1 molecule of C_3H_8
 - b. 4 molecules of CH_3OH
 - c. 1 molecule of $Mg_3(PO_4)_2$
11. Make a table showing the different properties of metals, non-metals, and metalloids in reference to their state, appearance, conductivity, malleability, and ductility.
12. What are the only two room temperature liquids on the periodic table? What state are most of the elements found in at room temperature?
13. What are the names of columns 1, 2, 17, and 18? Identify one characteristic of each group.
14. What three particles make up an atom? Identify their charge, location, and relative size.
15. What is an ion? Which column contains elements that do not form ions? How does a negative ion form? A positive ion?
16. Explain the differences between the two types of bonding: ionic and covalent.

Characteristics	Ionic compound	Covalent compound
Types of atoms involved: - Metals, non-metals?		
Structure: Are the electrons: - Shared, transferred?		
Properties: - Dissolves in water? - Conducts electricity? - other properties?		
Type of bond: - Ionic, molecular?		

17. Identify the type of bonding for the following compounds.

Compound formula	Ionic (I) or Molecular (M)
MgF_2	
H_2O	
Al_2S_3	
CO_2	

18. The columns of the periodic table are known as _____ or _____, while the rows of the periodic table are known as _____. All of the elements in a column have similar _____.
19. For the elements Potassium and Oxygen, write down the atomic number, the mass number, the number of electrons, the number of protons, the number of neutrons, the number of electron shells, the number of valence electrons and the charge it has when stable.

	Potassium	Oxygen
Atomic number		
Mass number		
No. Of Electrons		
No. Of Protons		
No. Of Neutrons		
No. Of Electron Shells		
No. Of Valence Electrons		
Charge When Stable		

20. a) Draw Bohr diagrams for the elements Nitrogen, Argon and Calcium. Include the number of protons, neutrons, electron shells, and electrons.
 b) Draw Lewis electron dot diagrams for Nitrogen, Argon and Calcium.
21. Why are groups 1 and 17 the most reactive families on the periodic table?
22. What is matter?
23. What are the flame test colours for copper, lithium and sodium?

Electricity Review

- What is the study of non-moving charges called? What causes it?
- What gives an object a negative, positive, or neutral charge?
- What does the Law of Attraction and Repulsion state?
- What is the difference between a conductor and an insulator? What are examples of each?
- What does the term “grounding” mean?
- What is the current in a circuit? What is the potential difference? What is the resistance? What units are used to measure each.
- What are two differences between a series circuit and a parallel circuit? Use a diagram to help illustrate your answer.
- Draw a series circuit diagram with two lamps, a three cell battery and an open switch.
- Draw a circuit diagram with two lamps in parallel, each with its own switch (to turn them off individually) and a two cell battery. Correctly add an ammeter and a voltmeter to measure the current of the circuit and the voltage across one of the lamps.
- What is the potential difference across a resistor of 120Ω that has a current of $0.8A$ flowing through it? Include units in your answer and show your work.
- If 800 coulombs of charge pass a point in a conductor for 45 seconds, what is the current in that circuit?
- A $9V$ batter is used to operate a flashlight. How much energy is used to tell ghost stories for 20 minutes at night, if the flashlight requires $0.14A$ to run?

Ecology Review

1. Definitions! Define each term below and also give an example.

Term	Definition	Example
Biotic		
Abiotic		
Ecosystem		
Producer		
Consumer		
Decomposer		
Scavenger		
Intraspecific competition		
Interspecific competition		
Predator		
Prey		
Species		
Population		
Community		
Density Independent		
Density Dependent		
Niche		
Trophic level		
Invasive Species		

2. Label the following organisms as producers (P), consumers (C), or decomposers (D).

- a. grass _____
- b. cows _____
- c. bacteria _____
- d. fish _____
- e. spider plant _____

3. Label the following organisms as herbivores (H), carnivores (C), or omnivores (O).

- a. humans _____
- b. frogs _____
- c. deer _____
- d. shark _____
- e. tadpoles _____

4. There are a number of cycles that occur in nature. Try to complete the following:

The Carbon cycle.

☺ Plants require carbon dioxide (which they get from the atmosphere) and they produce oxygen in a process called _____.

☺ Animals need oxygen to breathe and they exhale carbon dioxide in a process called _____.

The Water cycle.

☺ Water enters the atmosphere by _____.

☺ Water returns to the Earth's surface by _____.

The Nitrogen cycle.

☺ Plants require _____ from the soil for growth.

☺ Nitrogen is returned to the soil by _____ who convert ammonia into nitrates.

5. Define carrying capacity. What factors would decrease the carrying capacity of an ecosystem?

6. Which level in the food chain receives the most energy from the Sun? What happens to the amount of energy through a food chain? Explain.

7. What are three factors that affect population size and briefly explain how each impacts the population?

8. What are the three types of food pyramids? Explain their differences.

9. a) Explain the difference between a food chain and a food web.

b) List 8 organisms you can find in or around a pond in Ontario. Create a food web, labelling the levels of the various organisms (primary consumer, decomposer, producer, top carnivore, etc.). Also label the trophic levels (first, second, third...).

10. What is the original source of energy for most ecosystems on earth? _____

11. What are the three parts of the biosphere called? What does each one refer to?

12. Define the following symbiotic relationships: mutualism, commensalism and parasitism.

13. What can dung be used for?

Astronomy Unit

1. What is an orbital period? How long is Earth's orbital period? What is a rotational period? How long is Earth's rotational period?

2. What is responsible for the seasons on Earth?

3. Describe the following terms in relation to their date and the position of the Sun over the Earth.

a. vernal or spring equinox

b. summer solstice

c. autumnal or fall equinox

d. winter solstice

4. What does the luminosity of a star measure? What colour are hot stars, cool stars, and our Sun?

5. What are the three types of stars and how do they differ?
6. What may happen when a massive star cannot burn any longer? What are the two possible fates of the massive star? How can we tell what the end result will be?
7. What is the first gas that begins to burn when a star turns on? What is the waste product of the burned gas? Where does it go? What happens when all of the initial gas is used up? What is the process called which is the source of a star's immense energy?
8. What is the birthplace of a star known as? In a brief sentence, describe how a star forms. What gas is a star, like our SUN, primarily made up of?
9. What are the three different satellite orbits? What is found in each?
10. What are storms (violent high temperature eruptions) on the Sun called? What are the darker, cooler regions on the Sun known as?
11. Name the planets in our solar system from the innermost to the outermost. Which one is known as a minor planet?
12. Which planets are considered the inner planet? Which ones are the outer planets? Which ones are made of gases? Which ones are the rocky planets?
13. What is the biggest planet? What is the second largest? What is the smallest planet? What is the planet closest in size to the Earth? What is found between Mars and Jupiter? Which one is the hottest? Which one is tilted on its side? Which planet is rusty-red with polar ice caps and dry river beds? Which one has a great red spot? Which planet has water in all three states?
14. What is the most accepted theory for the creation of the universe?
15. What is the Earth's natural satellite?
16. How many phases does the Moon have? Name and describe each phase.
17. What are asteroids? What are comets? What produces the tail of a comet? What direction does the tail always point?
18. What is the difference between a "meteor" and a "meteorite"? What is a comet?
19. What is a galaxy? What are the three types? What is the name of our galaxy?
20. When does the corona of the SUN become visible?
21. What is the definition of a light year?
22. What is the geocentric model? the heliocentric model?
23. What is the difference between a lunar and solar eclipse?

 **Exam Tips:** Come prepared! You will need a pencil, an eraser, a ruler, pens and a calculator. Read each question carefully. Try to answer each question.