**SCIENCE 9 – CHEMISTRY CUMULATIVE TEST OUTLINE**



***Format: Combo multiple choice + written. Skill development section is written.***

**SKILLS to know how to demonstrate:**

* If given a data table with data, can you accurately graph it?
* If given a procedure, can you create a data table skeleton?

**CONTENT to know:**

**COMPOUNDS**

|  |  |
| --- | --- |
| * Compare/contrast ionic vs covalent compounds * Naming and writing **simple ionic** compounds   + *Ex.* Li+ + Cl- 🡪 LiCl , Lithium chloride   + *Ex.* Mg2+ + P3- 🡪 Mg3P2 , Magnesium phosphide * Naming and writing **multivalent** **ionic** compounds   + *Ex.* MnO2 🡪 Manganese (IV) oxide   + *Ex.* Chromium (II) sulphide 🡪 CrS | * Naming and writing **polyatomic** **ionic** compounds   + *Ex. Sodium carbonate 🡪* Na+ + CO32- 🡪 Na2CO3   + *Ex. Magnesium phosphate 🡪* Mg2+ + PO43- 🡪 Mg3(PO4)2 * Naming and writing compounds that include both multivalent and **polyatomic** **ionic** compounds   + *Ex. Copper(II) sulphate 🡪* Cu2+ + SO42- 🡪 CuSO4 * Naming and writing **covalent** compounds   + *Ex. Carbon tetrachloride 🡪*  CCl4 |

**PERIODIC TABLE**

* A picture containing text, newspaper, sign

  Description automatically generatedWhat is the periodic table and approximately how many elements are identified? How are elements organized?
* Metals vs non-metals vs semi-metals (aka metalloids)
  + Location on table
  + Typical properties (table 2.2)
* Which direction does a period go? What does this tell us about electrons shells?
* Which direction goes a group go? What does this tell us about valence electrons?
* Name and location (group number) of the 4 chemical families. General reactivity.
* How to read a symbol: atomic number, atomic mass, ion charge
* Diagram

  Description automatically generatedAtomic structure: location (in atom) and charge of subatomic particles
  + Proton
  + Neutron
  + Electron
    - What are valence electrons?
* Bohr model
  + Text

    Description automatically generatedWe use the Bohr model to understand probably location/spacing of electrons but it is NOT the most current model. What is the most current model called?
  + Draw the Bohr model of atoms
  + Draw the Bohr model of ions
* What is an Ion?
* Do metals lose or gain electrons? Do they form positive or negative ions?

Do they have a positive ion charge or negative ion charge? What about non-metals?

* Make a connection between valence electrons of atoms and ion charge of ions
* Why do noble gases not form ions?

**MATTER**

* A picture containing animal, mammal

  Description automatically generatedWhat is matter?
* What are the two types of changes matter can undergo? Give/Identify examples
* What are the signs that a chemical change has occurred?
* KMT
  + What does KMT stand for?
  + What are the main points of the theory?
  + What is the relationship between temperature and the states of matter, with reference to the KMT? How would this look on a graph?
  + What is the relationship between molecular motion and the states of matter, with reference to the KMT? How would this look on a graph?
  + What is the relationship between molecular interaction and the states of matter, with reference to the KMT? How would this look on a graph?
* States of matter
  + What are the 3 states of matter? What are the 6 terms indicating change of state?
  + Connect the KMT to the 3 states of matter
  + What is needed to force a shift between the states?
* What are qualitative physical properties of matter? Give/Identify examples
* What are quantitative physical properties of matter? Give/Identify examples
* What are the two categories of matter? Give/Identify examples
* What are the three types of mixtures? Give/Identify examples
* What are the two types of pure substances? Give/Identify examples

**MEASUREMENT**

|  |  |
| --- | --- |
| * What is mass?   + How is it measured (solids & liquids)? What are the units? | * What is volume?   + How is it measured (solids & liquids)? What are the units? * What is the difference between accuracy & precision? |

**SAFETY**

|  |  |
| --- | --- |
| * General Lab Safety Rules (text p 10,11) * HHPS   + What does it stand for?   + HHPS Symbols: types, shapes and levels | * WHMIS   + What does it stand for?   + WHMIS Symbols |

**SCIENTIFIC METHOD**

* What are the steps of the Scientific Method?
* What does a good hypothesis have? Can you prove a hypothesis to be true or false?
* What are Control Variables? Why is it important to identify them?
* What is an Independent Variable? Can you identify it in a scenario? Which axis is it graphed on?
* What is a Dependent Variable? Can you identify it in a scenario? Which axis is it graphed on?
* Text

  Description automatically generatedDo experiments test multiple variables or only one? Why?
* What is qualitative data? Can you give/identify examples?
* What is quantitative data? Can you give/identify examples?
* When is a bar graph used versus a scatter graph?