

Science 1206
Chemistry - Study Guide 1



Terms:

chemistry
matter
periodic table
alkali metals
halogen
atomic mass
valence electrons
Ion
chemical bonding
molecular formula
empirical formula

WHMIS
atom
period
alkaline earth metal
noble gas
Isotopes
valence shell
anion
covalent bond
Ionic Bond

MSDS
element
family (group)
transition metals
atomic number
bohr diagram
energy level (orbit)
cation
molecular compound
ionic compound
simple ion

- What does the acronym "WHMIS" represent?
 - What is the purpose of the WHMIS system?
 - Sketch and label all eight WHMIS symbols.
- What does the acronym "MSDS" represent?
 - How is a MSDS sheet useful to a chemistry student?
- Know the following about the Periodic table
 - Dmitri Mendeleev: Father of the Table
 - The horizontal rows are called periods and are labeled from 1 to 7.
 - The vertical columns are called groups are labeled from 1 to 18.
 - Elements in the same group have similar chemical and physical properties.
 - Columns are also grouped into families.
 - Know the difference families (alkali Metals, alkaline Earth Metals, transition Metals , Halogens, Noble gases
 - Know diatomic molecules (ending in **gen**)
- Understand the structure of the atom.
 - Know the elementary particles (Electron, Proton and Neutron) and their location
 - In an atom the number of proton equals the number of electrons.
 - Determine the number of elementary particle using the atomic mass and the atomic number
 - Know the number of electrons in the first three shells (2, 8, and 8)
- Explain the difference between
 - a covalent bond and an ionic bond
 - an atom and an ion
 - a cation and an anion
 - a simple ion and a polyatomic ion
 - a molecular formula and an empirical formula of a molecule
- Draw the Bohr diagram for an atom or an ion
 - the sulfur atom
 - the sulfide ion
 - the argon atom
 - calcium atom
 - calcium ion

Which Bohr diagrams look similar in question this?

Why do these diagrams look similar?

- Using Bohr diagrams to explain the difference types of bonding:
 - Show how the Cl_2 molecule forms from two Cl atoms. Label the TYPE of bond that forms.
 - Show how MgS forms from a Mg atom and a S atom. Label the TYPE of bond that forms.

8. Explain the difference between
- a covalent bond and an ionic bond
 - an atom and an ion
 - a cation and an anion
9. Identify whether a simple compound is ionic or molecular (covalent).
10. Name and write formula for simple molecular (covalent) compounds
11. Name and write formula for simple ionic compounds
12. Name and write formula using the stock system
13. Name and write formula for polyatomic compounds
14. Give the chemical formula (symbol and charge) for ions:
- | | |
|-------------------|-------------------|
| (a) cesium ion | (f) ammonium ion |
| (b) oxide ion | (g) nitrate ion |
| (c) gallium ion | (h) sulfate ion |
| (d) magnesium ion | (i) sulfite ion |
| (e) fluoride ion | (j) bisulfate ion |
15. Give the chemical formulas for ionic compounds:
- | | |
|-------------------------------|------------------------|
| (a) cesium sulfite | (d) ammonium fluoride |
| (b) magnesium nitrate | (e) ammonium bisulfate |
| (c) gallium sulfate dihydrate | (f) ammonium sulfate |
16. Give the chemical formulas for the following molecular compounds; use traditional names / formulas as required.
- | | |
|-----------------------------|--------------------------|
| (a) hydrogen | (d) hexasulfur dibromide |
| (b) trinitrogen monosulfide | (e) ozone |
| (c) carbon tetrachloride | (f) hydrogen peroxide |
17. For the following:
- | | | |
|---------------------------------------|---|---|
| | 1) classify whether the compound is ionic (i), molecular (m); | |
| | 2) name the compound. | |
| (a) HBr(aq) | (e) CH ₃ OH | (i) Al ₂ (CO ₃) ₃ |
| (b) NaOH | (f) NaCN | (j) HNO ₂ (aq) |
| (c) F ₃ I | (g) CaO ₂ COO | (k) HNO ₃ (aq) |
| (d) Sr(NO ₃) ₂ | (h) C ₃ H ₈ | (l) SiF ₄ |

