

## Chemistry 11 - Week 1: April 16<sup>th</sup>, 17<sup>th</sup>

Anticipated time required: 1 - 2 hours

Goals to be completed:

1. Review documents on this website to ensure that all class notes and assignments have been completed and are up to date. Send any emails to [Charlie.feht@yesnet.yk.ca](mailto:Charlie.feht@yesnet.yk.ca) if you are missing any notes and I will send you a completed copy of a note set.
2. Finish all ESSENTIAL assignments listed below:
  - a. Naming compounds assignments
  - b. Chemical bonding assignment
  - c. Multiple mole conversions assignment
  - d. Mixed mole and molarity problems
  - e. Density lab report
3. **New this week:** complete the 2020 midterm exam.
  - Midterm exam will be scored as an assignment (not as an exam) and may now be completed with assistance of any notes you possess, notes you acquire from this website, but should be done individually. PLEASE SHOW ALL OFF YOUR WORK TO EARN FULL MARKS ON EVERY QUESTION.

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Please submit completed midterm assignments to [Charlie.feht@yesnet.yk.ca](mailto:Charlie.feht@yesnet.yk.ca) either as a scanned and uploaded PDF attachment to email, or as a jpeg image file. Midterm assignments will be scored and sent back to you as I receive them.

Upcoming next week:

Review of moles and molarity including multiple mole conversions, and moles unit assignment

## Chemistry 11 Midterm Assignment

### Definitions:

London dispersion force –

Intramolecular force –

Translational kinetic energy –

Ionization energy –

Orbital –

Qualitative description –

### Multiple Choice

1. Select which is the correct order of filling electron subshells.
  - A. 5p, 5d, 5f, 6s
  - B. 6s, 5d, 6p, 6f
  - C. 5s, 4d, 5p, 6s
  - D. 6s, 4f, 5d, 5f
2. How many protons, neutrons and electrons does a Chlorine Anion have if its atomic mass is 36? (3 marks)  
Protons =  
Neutrons=  
Electrons=
3. An atom of an element forms a stable ion by easily gaining 1 electron the ion has a charge of:
  - A. 2+ and is in Group 17.
  - B. 1+ and is in Group 1.
  - C. 1- and is in Group 17.
  - D. 1- and is in Group 1.

4. An element whose electron configuration ends in  $4s^1$  is a member of which family
- A. Group 6
  - B. Group 16
  - C. Halogens
  - D. Group 2
  - E. Alkali metals
5. Which electronic configuration would you expect to have the largest electronegativity?
- A.  $1s^2 2s^2 2p^6 3s^1$
  - B.  $1s^2 2s^2 2p^6 3s^2 3p^5$
  - C.  $1s^2 2s^2 2p^6 3s^2$
  - D.  $1s^2 2s^2 2p^6 3s^2 3p^6$
6. The electronegativity of atoms decreases as the
- A. Size of the atoms becomes smaller
  - B. Ionization energy increases
  - C. Number of electron shells increases
  - D. Atoms become less metallic
7. How Many valence electrons are in an atom of Silicon? (1 point)
- A. 0
  - B. 2
  - C. 4
  - D. 14
8. Which of the following has 1 lone pair of electrons and 3 bonding electrons?
- A. Nitrogen
  - B. Helium
  - C. Oxygen
  - D. Iodine
9. The number 3.0 has how many significant digits?
- A. 1
  - B. 2
  - C. 3
  - D. 4
10. The number 0.002 has how many significant digits?
- A. 1
  - B. 2
  - C. 3
  - D. 4

11. When the number 29.55 is rounded to 3 significant digits the result is?
- A. 30.0
  - B. 29.6
  - C. 29.5
  - D. 29.0
12. The freezing point of water is 0 degrees Celsius. What type of description is this?
- A. Physical and Intensive
  - B. Physical and Extensive
  - C. Chemical and Intensive
  - D. Chemical and Extensive
13. The formula for magnesium nitrate is?
- A.  $\text{Mg}(\text{NO}_3)_2$
  - B.  $\text{Mg}_2\text{NO}_3$
  - C.  $\text{MgNO}_3$
  - D.  $\text{Mg}_2(\text{NO}_3)_3$ .
14. One molecule of barium phosphate contains how many atoms?
- A. 6
  - B. 11
  - C. 13
  - D. 17
  - E. none of these
15. The correct formula for magnesium hydroxide is?
- A.  $\text{MgOH}$
  - B.  $\text{MgOH}_2$
  - C.  $\text{Mg}_2\text{OH}$
  - D.  $2\text{MgOH}$
  - E.  $\text{Mg}(\text{OH})_2$ .
16. In which section of the periodic table are the most electronegative elements found?
- A. upper left
  - B. lower left
  - C. upper right
  - D. lower right
  - E. island at bottom
17. An atom needs to gain 3 electrons to become noble-like. It has 16 neutrons. Identify this atom.
- A. Al
  - B. Bi
  - C. P
  - D. Li
  - E. Sr

18. How many neutrons are present in an atom of silver which has a mass number of 108?
- A. 14
  - B. 47
  - C. 61
  - D. 108
19. Which of the following must be testable and falsifiable?
- A. Hypotheses
  - B. Theories
  - C. Laws
  - D. All of the above
20. The atomic mass of Mg is 24, and the atomic mass of Cl is 35.5. One mole of  $\text{MgCl}_2$
- A. Represents 95 molecules of the compound.
  - B. Contains 35.5 molecules of chlorine.
  - C. Represents 95 grams of the compound.
  - D. Contains 2 moles of chlorine molecules.
21. How many phases are present in any sort of mechanical mixture?
- A. 0
  - B. 1
  - C. More than 1
  - D. More than 2
22. Choose the best option for lab safety when performing chemical reactions:
- A. Always increase the amount of reactants for a cooler explosion
  - B. Alkali metals should be mixed with water whenever possible
  - C. It is easiest to taste test the chemicals because it's probably nothing dangerous
  - D. Listen to Mr. Feht's instructions so that nobody ends up in the emergency room

### Short Answer

21. Draw the Lewis structures for the following covalent molecules (6 marks)

a)  $\text{NH}_3$

b)  $\text{Cl}_2$

c)  $\text{CO}_2$

22. Nomenclature (16 marks).

In the 1<sup>st</sup> 2 columns write the correct chemical formula, in the 2<sup>nd</sup> the correct name.

<i>Name</i>	<i>Formula</i>	<i>Formula</i>	<i>Name</i>
Magnesium Fluoride		CaF <sub>2</sub>	
Lithium Chloride		KBr	
Calcium Chloride Dihydrate		CuCl	
Sulfur difluoride		CuCl <sub>2</sub>	
Sulfurous Acid		CuO	
Aluminum Oxide		AlCl <sub>3</sub>	
Iron(II) Oxide		HI	
Aluminum Sulfide		MgI <sub>2</sub>	

23. Find the Molar Mass of the following Compounds (2 marks each)

a) C<sub>7</sub>H<sub>6</sub>

b) KNO<sub>4</sub>

24. Calculate the number of moles of MgO in 12.0 grams. (5 marks)

25. If you have 2.45 moles of  $C_2H_2$  how many molecules of  $C_2H_2$  do you have? (5 marks)

26. What volume of gas at STP is occupied by each of the following compounds? (6 marks)

a) 16.5 g of  $AsH_3$  (g)

b) 3.25 kg of  $C_2H_6$  (g)