Science 10 – Chemistry Unit Review Name:

	Emerging (1-2)	Developing (3-4)	Proficient (5-6)	Extending (7-8)
A. Knowing & Understanding	i. *State* scientific knowledge,	i. *Outline* scientific knowledge	i. *Describe* scientific knowledge	i. *Explain* scientific knowledge
	ii. Apply scientific knowledge and understanding to suggest solutions to problems set in familiar situations,	ii. Apply scientific knowledge and understanding to solve problems set in familiar situations,	ii. Apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in *unfamiliar* situations,	ii. Apply scientific knowledge and understanding to solve problems set in familiar and *unfamiliar* situations,
	iii. Interpret information to make judgments.	iii. Interpret information to make scientifically supported judgments.	iii. Analyse information to make scientifically supported judgments.	iii. Analyse *and evaluate* information to make scientifically supported judgments.

The test will be broken down into three main sections based on each strand:

1. ***Knowledge (i)*** – Recalling information that you have learned
2. ***Problem Solving (ii)*** - Using the information to solve problems
3. ***Interpreting Information (iii)*** - You will be given data to interpret and draw conclusions using what you have learned

Topics:

- Atomic Theory (subatomic particles, atoms and ions)
- Periodic Table (organization and trends)
- Lewis and Bohr Diagrams
- Ionic and Covalent (bonding and properties)
- Naming and Writing Formulas
  - Ionic
  - Multi-valent
  - Polyatomic
  - Covalent
- Balancing Equations
- Acids and Bases/pH
- Types of Chemical Equations

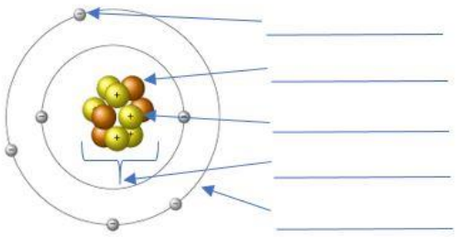
OPTIONAL Helpful textbook practice problems:

Textbook link: https://moeinferdosian.weebly.com/uploads/2/0/2/7/20272409/science_10_textbook__1_.pdf

- Pg 176 – Periodic table and electron arrangements
- Pg 181 – Try drawing some of the elements listed using both Bohr and Lewis
- Pg 183 – Check your understanding (Atomic Theory)
- Naming and writing formulas – Pg 187, 188, 190, 191, 193, 195, 197
- Pg 201 – Check your understanding (naming and writing formulas)
- Balancing Chemical Equations – Pg 207, 211
- Pg 215 – Check your Understanding (Balancing)
- Pg 233 – Check your understanding (Acids and Bases)
- Pg 236 – Acid-Base Neutralization
- Types of Chemical Reactions – Pg 259 – 265, 271

Emerging - 1-2 level questions

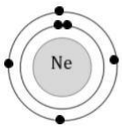
1. (i)State the subatomic particles in the following atom:

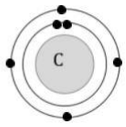


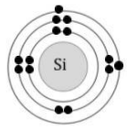
2. (ii)How many neutrons does Magnesium have?

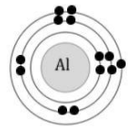
3. (iii) Which atom has more electrons – Oxygen or Fluorine?

4. (iii) Which of the following Bohr diagrams is correct? _____









5. Name and Describe the following bonds:

Formula	**Name**	**Ionic/Covalent**
BeS		
$CoBr_2$		
$Cr_2(SO_4)_3$		
CS_2		
N_2O_5		
NaOH		
Sn_2O_3		

6. Complete the cloze paragraph using the word bank provided below. *(Tip: try filling it out without using the wordbank first!)*

   You can identify an acid because it has _____ in the formula. You can identify a base because it has _____ in the formula. Acids taste _____ and they _____ the skin. They release _____ and can be found in products such as _____. Bases taste _____ and feel _____ when touched. They are found in products such as _____. The _____ scale is used to measure how acidic or basic a solution is. The scale starts from _____ and goes to _____. On this scale, _____ is acidic and _____ is basic. _____ is neutral. _____ are chemicals that change colour when the pH of a solution changes. Examples of these are _____ , _____ and_____.

Word Bank:

Sour	14	OH	pH	Cabbage juice	soaps
Slippery	H	8 to 14	Corrode	1 to 6	7
Indicatorsburn	0	Bromothymol blue	Methyl orange H	bitter	Phenolphthalein vinegar
		H^+			

Developing- 3-4 level questions

7. (i)Outline how you would determine the charge of an atom.

8. (ii) Answer the following questions regarding Calcium
    a. In what period is it located?
    b. In what family/group is it located?
    c. What is its atomic number?
    d. What is its mass?
    e. If it has a charge of +2, how many electrons would it have?

9. Draw each of these elements using both bohr and lewis models:

Element	Bohr	Electron Dot Diagram
Beryllium		
Potassium $^{1+}$ (ion)		
Nitrogen		
Sulphur $^{2-}$ (ion)		

10. Write the formula for the following equations:
    a. Sodium iodide _____
    b. Potassium cyanide _____
    c. Tin (II) permanganate _____
    d. dichlorine monoxide _____
    e. disulphur pentoxide _____
    f. Cobalt (II) oxide_____

11. (ii) Draw the Lewis Structures for the following compounds
    a. K_3P b. N_2O_3

12. Balance the following reactions and determine the type of reaction it is.

    a. _____ $AlCl_3$ + _____ Na_2CO_3 → _____$Al_2(CO_3)_3$ + _____ NaCl
    _____

    b. _____ C_2H_6 + _____ O_2 →_____CO_2 + _____ H_2O _____

    c. ____NH_4Cl + ____ $Pb(NO_3)_3$ --> ____ NH_4NO_3 + _____$PbCl_3$ _____

    d. ___Zn + ____ $Cu(NO_3)_2$ --> ____$Zn(NO_3)_2$ + ____ Cu _____

    e. ___P + _____ Br_2 --> ___ PBr_3 _____

Proficient – 5-6 level questions

13. (ii)Using your knowledge of valence electrons and stability of electron shells, explain why sulfur forms an anion of charge -2.

14. Calcium hydroxide is a base. Draw the Lewis Structure for it.

15. Predict the products of the following reactions.
    a. _____Mg + ____Fe_2O_3 →

    b. _____C_2H_4 + _____ O_2 →

    c. _____PbI_3 →

Extending – 7-8 level questions

16. Draw the Lewis structure for ethanol (C_2H_5O) – an alcohol and with arrows, describe why you put the bonds where you did.

17. Maria, Lewis and Amanda are fiends who go camping every summer. When they want to start a fire, they always have a bet on who can start a fire with the classic "twist a stick on another" faster. Using your knowledge of the atomic theory and combustion reaction, explain how a fire is started by just twisting a stick on another.

ii. apply scientific knowledge and understanding to solve problems set in unfamiliar situations

10. Represent the chemical reaction below using a word skeleton and then convert it to a balanced chemical equation using the chemical formulas. Indicate the type of reaction.

    When aqueous solutions of potassium permanganate and nickel II nitrate are mixed, a solution of potassium nitrate and a precipitate of nickel II permanganate form.