

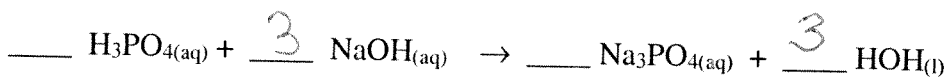
Chemistry Part I– Place the correct answers on the Scantron Sheet. Be sure to indicate the difference between the Chemistry and Ecology answer sheets.
(25 marks)

- Which of the following would be considered a heterogeneous mixture?
 - Gatorade
 - table salt
 - chicken noodle soup
 - ammonia
- A pure substance forms a non-conductive solution. The class of compounds that it belongs to...
 - could be ionic or molecular.
 - could be ionic or acid
 - could be molecular or acid
 - could only be molecular.
- What is an ion with a positive charge?
 - element
 - cation
 - formula unit
 - anion
- Which of the following is a chemical property of a substance?
 - It floats
 - It is clear and colourless
 - It is attracted by a magnet
 - It coats itself with an oxide when exposed to air.
- Which family on the periodic table does calcium belong to?
 - Halogens
 - Noble gases
 - Alkali metals
 - Alkaline earths
- What is a row of elements in the periodic table known as?
 - group
 - list
 - period
 - transition
- Which description best describes $\text{HNO}_{3(aq)}$?
 - acid
 - molecular substance
 - ionic compound
 - nonmetal
- Which of the following describes the state of an atom's nucleus?
 - neutral
 - positive
 - negative
 - magnetic
- If an oxygen atom forms the oxygen ion O^{2-} it has ...
 - gained 2 electrons
 - loss 2 electrons
 - gained 2 protons
 - loss 2 protons
- Which term below refers to multiple atoms that bond together with an overall charge?
 - Ionic compounds
 - Polyatomic ions
 - Multivalent atoms
 - Molecular compounds

11. Which chemical family naturally has full valence electron levels?
- A. Halogens
 - B. Noble gases
 - C. Alkali metals
 - D. Alkaline earths
12. Which element when combined with fluorine would most likely form an ionic compound?
- A. lithium
 - B. phosphorus
 - C. carbon
 - D. chlorine
13. What ion contains $18e^-$ and $16p^+$?
- A. sulfide ion
 - B. calcium ion
 - C. argon ion
 - D. chloride ion
14. Which element exists naturally as a diatomic molecule?
- A. magnesium
 - B. lead
 - C. sulfur
 - D. fluorine
15. Which of the following is a physical property of sugar?
- A. It decomposes readily.
 - B. It turns black with concentrated sulfuric acid
 - C. It burns to produce carbon dioxide and water
 - D. It is a white crystalline solid
16. Which of the following elements are multi-valent (can form several ions)?
- A. Cu
 - B. Cd
 - C. Br
 - D. Al
17. How many valence electrons does a carbon atom have?
- A. 3
 - B. 4
 - C. 5
 - D. 6
18. What is the correct name for N_2O_4 ?
- A. nitrogen oxide
 - B. dinitrogen tetraoxide
 - C. nitric acid
 - D. nitrogen(II) oxide
19. What is true in covalent bonding?
- A. There is a force of attraction between a metallic and a nonmetallic atom
 - B. There is a force of attraction between two metallic atoms
 - C. Both atoms share electrons
 - D. A cation and an anion form a molecule
20. Which of the following is **NOT** a property of an acid?
- A. taste sour
 - B. feels slippery
 - C. pH below 7
 - D. conducts electricity
21. In an ionic compound with the formula XO_2 , what is the charge on the X ion?
- A. 1+
 - B. 2+
 - C. 3+
 - D. 4+

22. Which term refers to the chemicals present at the start of a chemical reaction?
 (A) reactants
 B. products
 C. molecules
 D. compounds

23. What are the coefficients when the following equation is balanced?



- (A) 1, 3, 1, 3
 B. 1, 3, 3, 1
 C. 3, 2, 2, 6
 D. 2, 3, 1, 3

24. Which of the following is a single replacement reaction?

- A. $2 \text{H}_2 + \text{O}_2 \rightarrow 2 \text{H}_2\text{O}$
 B. $2 \text{H}_2\text{O} \rightarrow 2 \text{H}_2 + \text{O}_2$
 C. $2 \text{KI} + \text{Pb}(\text{NO}_3)_2 \rightarrow 2 \text{KNO}_3 + \text{PbI}_2$
 (D) $\text{H}_2 \text{SO}_4 + \text{Mg} \rightarrow \text{MgSO}_4 + \text{H}_2$

25. Which of the following represents a simple decomposition reaction?

- (A) $2 \text{H}_2\text{O} \rightarrow 2 \text{H}_2 + \text{O}_2$
 B. $2 \text{KClO}_3 \rightarrow 2 \text{KCl} + 3 \text{O}_2$
 C. $\text{C}_2\text{H}_6 + \text{O}_2 \rightarrow 3 \text{H}_2\text{O} + 2 \text{CO}_2$
 D. $2 \text{KI} + \text{Pb}(\text{NO}_3)_2 \rightarrow 2 \text{KNO}_3 + \text{PbI}_2$

Chemistry Part II – Extended Response (25 marks) – Answer all of the questions in the space provided.

1. Sketch the electron configuration diagrams for a calcium atom and the bromide ion. Include the correct number of protons, electrons, and the proper atomic symbols in the diagrams. (2 marks)

Calcium Atom	Bromide Ion
$2e^-$ $8e^-$ $8e^-$ $2e^-$ Ca $20p^+$	$8e^-$ $8e^-$ $8e^-$ $2e^-$ Br^- $35p^+$

2. Explain the difference between the ionic bonding of ionic compounds and the covalent bonding of molecules. (2 marks)

ionic	molecular
metal nonmetal	non metals
lose	sharing electrons
gain	covalent bond
attraction	

3. Match the following Workplace Hazardous Materials Information System (WHMIS) symbols to the type of hazard it indicates by placing the symbol letter next to proper hazard. (2 marks total)

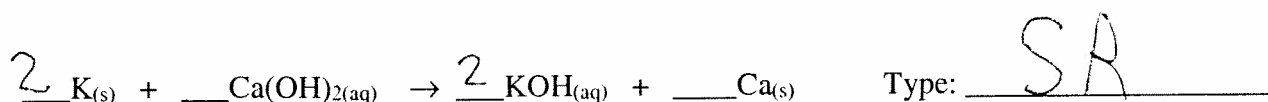
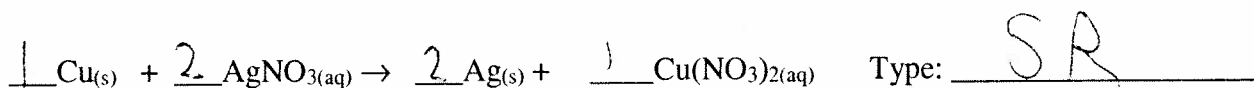
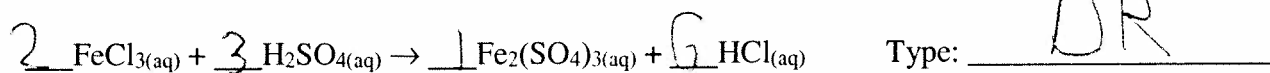


Biohazardous Infectious Material C
 Flammable Material A
 Corrosive Material D
 Poisonous Material B

3. Complete the following tables by placing the chemical formula or chemical name in the space provide (1/2 mark each) (6 marks total)

Chemical Name	Chemical Formula
sodium bromide	NaBr
glucose	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$
aluminum chloride	AlCl_3
iron (III) iodide	FeI_3
hydrofluoric acid	HF(aq)
tetraphosphorous hexa oxide	P_4O_6
tin (IV) sulfate	SnO_2
Sulfur trioxide	SO_3
Methane	CH_4
lead (II) Nitrate	$\text{Pb}(\text{NO}_3)_2$
carbon disulfide	CS_2
Nitric acid	$\text{HNO}_3(\text{aq})$

4. Balance the chemical reactions and name the reaction type. (5 marks)



5. For each of the following word equations, give the **balanced** chemical equation.
(4 marks – 2 marks each)

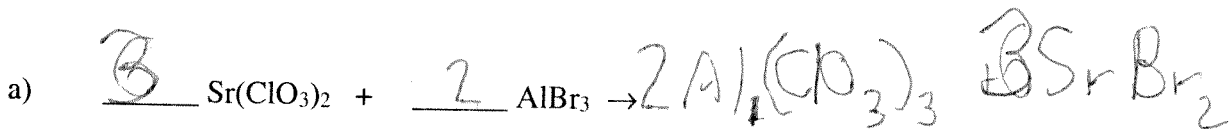
a) Solid aluminum combines with oxygen gas to produce solid aluminum oxide.



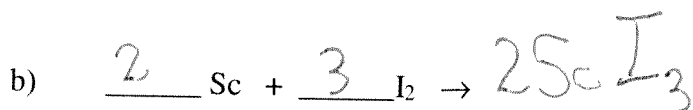
b) A solution of calcium carbonate will react with a solution of potassium chloride to produce calcium chloride and potassium carbonate



6. For each set of reactants, predict the products, balance the chemical equations, and name the reaction types. (4 marks – 2 marks each)



Reaction Type: DR



Reaction Type: C