

Study Guide –Chapter 6

CHM1033. Summer 2020

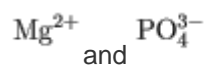
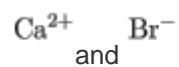
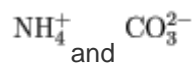
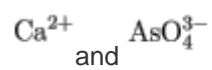
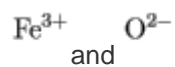
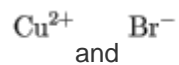
Test # 3: Jul. 1st (Chapters: 6, 7 and 9)

1. Write the symbols of the ions with the following number of protons and electrons.
 - a) 4 protons, 2 electrons
 - b) 9 protons, 10 electrons
 - c) 12 protons, 10 electrons
 - d) 24 protons, 21 electron
2. State the number of electrons that must be lost by atoms of each of the following to acquire a noble gas electron arrangement:
 - a) Li
 - b) Ca
 - c) Ga
 - d) In
 - e) Ba
3. State the number of electrons that must be gained by atoms of each of the following elements to acquire a noble gas electron arrangement:
 - a) Cl
 - b) Se
 - c) N
 - d) I
 - e) S

4. a) The number of electrons in an ion with 20 protons and an ionic charge of $2+$ is _____
- b) What is the symbol for the ion with 19 protons and 18 electrons? _____
- c) What is the ionic charge of an ion with 18 protons and 15 electrons? _____
5. When a cation is formed from a representative element
- A) electrons are gained and the ion is smaller.
- B) the cation acquires a negative charge.
- C) electrons are lost and the ion is larger.
- D) electrons are gained and the ion is larger.
- E) electrons are lost and the ion is smaller.
6. Give the name of the following ions

H^-		ClO_3^-	
F^-		ClO_4^-	
Cl^-		NO_3^-	
Br^-		MnO_4^-	
I^-		CO_3^{2-}	
CN^-		SO_4^{2-}	
OH^-		PO_4^{3-}	
O^{2-}		$\text{C}_2\text{H}_3\text{O}_2^-$	
S^{2-}		NH_4^+	
N^{3-}		SO_3^{2-}	
ClO^-		HSO_4^-	
ClO_2^-		HSO_3^-	
HCO_3^-		PO_3^-	

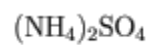
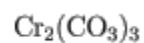
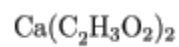
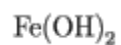
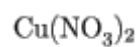
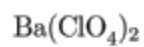
7. Predict the chemical formulas of the compounds formed by the following pairs of ions. Express your answer as a chemical formula.



8. Predict whether each of the following compounds is covalent (molecular) or ionic

	CH_3OH	NOCl	NF_3
Ag_2SO_4	CsBr	Sc_2O_3	LiNO_3
molecular	ionic		

9. Name the following ionic compounds:



10. Give the name or chemical formula, as appropriate, for each of the following molecular substances.



dinitrogen tetroxide

hydrogen cyanide

tetraphosphorus hexasulfide

ANSWERS

- a) Be^{2+} b) F^- c) Mg^{2+} d) Cr^{3+}
- a) 1 b) 2 c) 3 d) 3 d) 2
- a) 1 b) 2 c) 3 d) 1 e) 2
- a) 18 b) K^+ c) 3+
- E)
-

H^-	hydride	ClO_3^-	chlorate
F^-	fluoride	ClO_4^-	perchlorate
Cl^-	chloride	NO_3^-	nitrate
Br^-	bromide	MnO_4^-	permanganate
I^-	iodide	CO_3^{2-}	carbonate
CN^-	cyanide	SO_4^{2-}	sulfate
OH^-	hydroxide	PO_4^{3-}	phosphate
O^{2-}	oxide	$\text{C}_2\text{H}_3\text{O}_2^-$	acetate
S^{2-}	sulfide	NH_4^+	ammonium
N^{3-}	nitride	SO_3^{2-}	sulfite
ClO^-	hypochlorite	HSO_4^-	hydrogensulfate (or bisulfate)
ClO_2^-	chlorite	HSO_3^-	hydrogensulfite (or bisulfite)
HCO_3^-	hydrogencarbonate (or bicarbonate)	PO_3^-	phophite

7. CuBr_2 ; Fe_2O_3 ; $\text{Ca}_3(\text{AsO}_4)_2$; $(\text{NH}_4)_2\text{CO}_3$; CaBr_2 ; K_2CO_3 ; $\text{Al}(\text{CH}_3\text{COO})_3$;
 $\text{Mg}_3(\text{PO}_4)_2$

molecular

CH₃OH

NOCl

NF₃

ionic

LiNO₃

Sc₂O₃

CsBr

Ag₂SO₄

- 8.
9. magnesium oxide; aluminum chloride; lithium phosphate; barium perchlorate; copper(II) nitrate; iron(II) hydroxide; calcium acetate; chromium (III) carbonate; potassium chromate; ammonium sulfate

10. sulfur hexafluoride; iodine pentafluoride; xenon trioxide; N_2O_4 ; HCN ; P_4S_6