

Final Exam CHM 2045C

I. General Knowledge:

	List the 7 strong acids
	What theory is used to describe the behavior of gases?
	When naming a substance, when are numeric prefixes used?
	When a reaction is endothermic, what is the sign of the enthalpy? (Positive or negative)
	What relates the number of molecules of a compound to the number of moles?
	How does a chemical reaction do work?
	When is the activity series used?
	When are the solubility rules used?
	What types of substances are strong electrolytes?
	What characteristics does a polar molecule have?

II. Predicting the Products of Chemical Reactions:



III. For reaction in part II, number 1 above:

a) write the total ionic equation

b) write the net ionic equation

_____ c) calculate the enthalpy of the reaction

_____ d) If 25 g of the Ni are reacted, what amount of heat would be released or absorbed?

IV. For the following, complete the Lewis structure and hybrid diagram. Be sure to consider the correct geometry in your hybrid structure. SF_6

_____ number of F bonds

_____ number of B bonds

_____ formal charge on S

_____ geometry of molecule

_____ hybridization of S

_____ hybridization of F

_____ Number of Valence electrons in molecule

V. Atomic Structure:

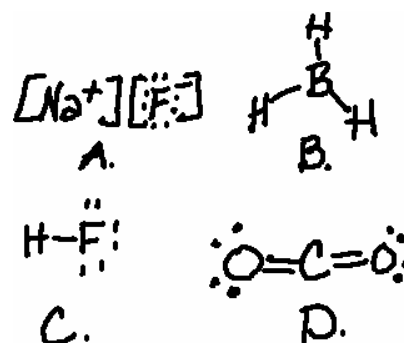
_____ Draw the electron configuration and orbital diagram for N^{3-}

Name	Formula	Name	Formula
Boron Trihydride →			<- CCl ₄
Carbonic Acid →			<- HC ₂ H ₃ O ₂
Mercury(I) Nitrate →			<- CrO ₃
Silver Phosphite →			<- MnCl ₂
Barium Oxalate →			<- H ₂ S

Consider the reaction of 10.0 g of sodium phosphate with 25.00 mL of 3.0M HCl.

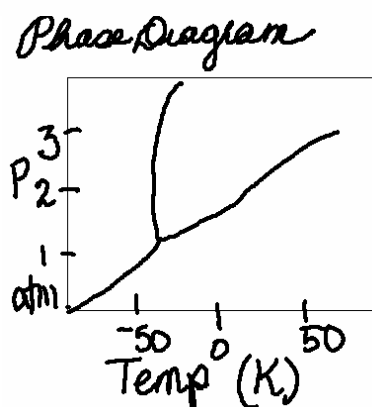
- _____ A. Write the balanced molecular equation
 _____ B. Identify the Limiting reagent
 _____ C. Is the reaction at the endpoint? Explain your answer.

Given the following substances, arrange them in order of increasing melting points. Explain your answer.



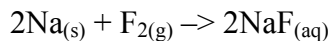
Consider the phase diagram shown.

- A. Label the states and features
 _____ B. In what physical state will the substance be at 2 atm and 300K?
 _____ B. Draw an X to indicate the boiling point at 3 atm.



Extra Credit: 5 Points each:

1. Draw the Born Haber Cycle for the reaction :



2. If the Grinch lives 1 mile above Whoville in an ice cave, how must he adapt his cooking of roast beast so that it turns out correctly. Explain your answer in terms of concepts that we learned this term.

