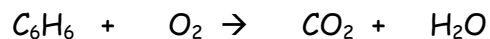


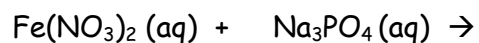
**CHM 101 EXAM II**

Show all calculations with units and proper number of significant figures! Write in clear and complete sentences. Turn in the take-home component with this exam. **GOOD LUCK!**

1. Balance the following reaction (no fractions) (4)



2. Predict the product, balance and using the solubility rules, attached to back of exam, determine the state of the products. (8)



3. Write the electron configuration and circle the valence electrons for the following. (10)

Ar

As

4. Write the electron configuration of the following ions and state which noble gas they are isoelectronic with. (10)

$\text{Cl}^-$

$\text{Al}^{+3}$

5. Circle the correct answer. (6)

smallest size	$N^{+3}$	N	$N^{-3}$
largest IE for next electron removed	Na	$Na^+$	$Na^{+2}$
largest atomic size	Na	Al	S

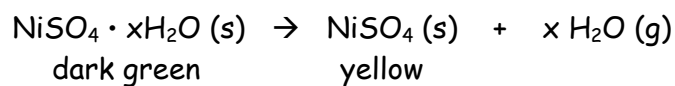
6. Draw the Lewis dot structures for the two compounds given below. The carbon is in the center. (6)



7. How many unpaired electrons does a chromium atom have? (3)

A reaction in aqueous solution in a beaker was exothermic. How would detect this? (3)

8. A dark green hydrate of nickel (II) sulfate fades on heating to light green and then to yellow as the anhydrous nickel (II) sulfate forms as shown by the reaction below.



Using the data given below, calculate the value of  $x$  in the hydrate. (15)

Item	Mass
Empty crucible	13.72 g
Crucible with hydrate before heating	16.57 g
Crucible with anhydrous salt after heating	15.29 g

How would the value of  $x$  be influenced if the final heated crucible material was light green and not yellow? Explain. (5)