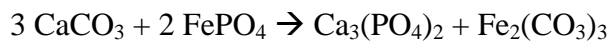


CHEM 0011: Practice Test

QUESTION	MARK OBTAINED	MARK POSSIBLE
I		9
II		8
III		26
IV		4
TOTAL		47

I. For the following reaction,



assuming we start with 100 grams of calcium carbonate and 45 grams of iron (III) phosphate.

find the following:

- a) Which of the reagents is the limiting reagent? Explain. **[3 marks]**
- b) What is the maximum amount of each product that can be formed?
[3 marks]
- c) How much of the other reagent is left over after the reaction is complete? **[3 marks]**

II. A 25.00 mL sample of a 0.5250 M H_2SO_4 solution is titrated with a NaOH solution using phenolphthalein as the indicator. It is found that 22.07 mL of the NaOH solution is needed to reach the endpoint of the titration.

(a) What is the molarity of the NaOH solution? [**4 marks**]

(b) Upon closer look, the pipette that was used to pipette the sample of acid was a 20.00 mL pipette. What is the molarity of the NaOH solution? [**4 marks**]

III. There are 5 parts to this section. Predict, classify and write the reaction (if a reaction occurs). NOTE: The answer may be 'no reaction'. If (i) is no reaction, then there is no need to answer (ii), (iii), (iv).

1. When potassium metal is dipped into water.

(i) Will this reaction occur? **[1 mark]**

(ii) If (i) is yes, classify the reaction. **[1 mark]**

(iii) If (i) is yes, write the product(s) of the reaction. Include the physical states of the product(s). **[1 mark]**

(iv) If (i) is yes, write the net ionic reaction. Include the physical states of the reactants and products. **[1 mark]**

(v) Which species is oxidized? **[1 mark]**

(vi) Which species is reduced? **[1 mark]**

2. Burning of methane gas, CH_4 .

((i) Will this reaction occur? **[1 mark]**

(ii) If (i) is yes, classify the reaction. **[1 mark]**

(iii) If (i) is yes, write the product(s) of the reaction. Include the physical states of the product(s). **[1 mark]**

(iv) If (i) is yes, write the balanced chemical reaction. Include the physical states of the reactants and products. **[1 mark]**

3. Immerse copper metal into a zinc chloride, ZnCl_2 , solution.

(i) Will this reaction occur? **[1 mark]**

(ii) If (i) is yes, classify the reaction. **[1 mark]**

(iii) If (i) is yes, write the product(s) of the reaction. Include the physical states of the product(s). **[1 mark]**

(iv) If (i) is yes, write the net ionic reaction. Include the physical states of the reactants and products. **[1 mark]**

(v) Which species is oxidized? **[1 mark]**

(vi) Which species is reduced? **[1 mark]**

4. Strontium hydroxide reacts with sulfuric acid.

(i) Will this reaction occur? **[1 mark]**

(ii) If (i) is yes, classify the reaction. **[1 mark]**

(iii) If (i) is yes, write the product(s) of the reaction. Include the physical states of the product(s). **[1 mark]**

(iv) If (i) is yes, write the net ionic reaction. Include the physical states of the reactants and products. **[1 mark]**

5. Iodine is immersed in a solution of KCl.

(i) Will this reaction occur? **[1 mark]**

(ii) If (i) is yes, classify the reaction. **[1 mark]**

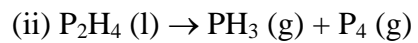
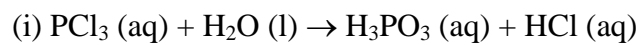
(iii) If (i) is yes, write the product(s) of the reaction. Include the physical states of the product(s). **[1 mark]**

(iv) If (i) is yes, write the net ionic reaction. Include the physical states of the reactants and products. **[1 mark]**

(v) Which species is oxidized? **[1 mark]**

(vi) Which species is reduced? **[1 mark]**

IV. Balance the following reaction: [4 marks]



The following reference tables will be provided on day of the test:

1. Periodic table
2. Activity Series of Metals
3. Solubility Rules Table