

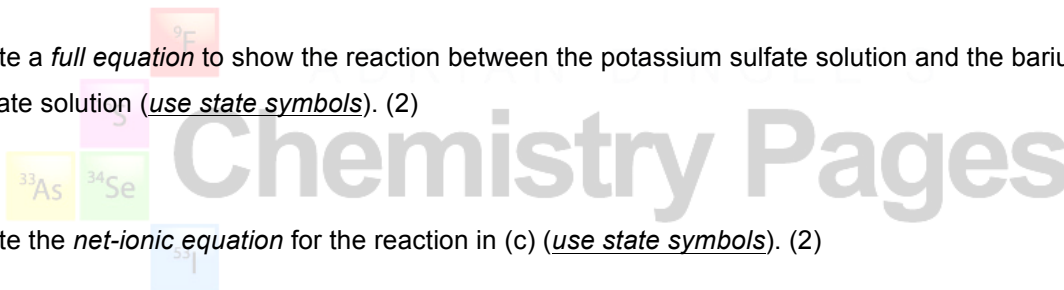
AP QUIZ 03A: Chemical Reactions

Name: _____

Question 1

A sample of *impure* potassium sulfate with a mass of 3.674 g is completely dissolved in deionized water, and made up to the mark in a 250.0 mL volumetric flask. A 10.00 mL portion of the solution had an excess of aqueous barium nitrate solution added to it, and a white precipitate was observed to form. After *performing the necessary lab work*, 0.09666 g of the white solid was recovered.

- (a) Use an equation (with state symbols) to show how potassium sulfate dissolves in the flask. (1)
- (b) Would you expect the potassium sulfate solution to conduct electricity? Explain. (2)
- (c) Write a *full equation* to show the reaction between the potassium sulfate solution and the barium nitrate solution (use state symbols). (2)
- (d) Write the *net-ionic equation* for the reaction in (c) (use state symbols). (2)
- (e) Which three, named techniques, does, '*performing the necessary lab work*' refer to? (3)
- (f) Calculate the percentage by mass of the potassium sulfate in the original, impure sample. (4)



Question 2

Ethane, C₂H₆, is a gaseous hydrocarbon that burns (combusts) according to the chemical equation shown below.



5.00 g of ethane gas is brought together with 0.700 moles of oxygen gas in a container, and a spark is used to cause the combustion reaction to occur.

(a) Determine the limiting reactant in the mixture. Show calculations that support your answer. (3)

(b) In the experiment above, it is found that when the reaction is complete, 8.23 g of CO₂ is *actually* produced. Determine the percentage yield in the reaction. (3)

