

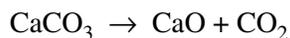
AP[®] CHEMISTRY
2006 SCORING GUIDELINES (Form B)

Question 4

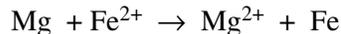
4. Write the formulas to show the reactants and the products for any FIVE of the laboratory situations described below. Answers to more than five choices will not be graded. In all cases, a reaction occurs. Assume that solutions are aqueous unless otherwise indicated. Represent substances in solution as ions if the substances are extensively ionized. Omit formulas for any ions or molecules that are unchanged by the reaction. You need not balance the equations.

General Scoring: Three points can be earned for each reaction: one point for the correct reactant(s) and two points for the correct product(s).

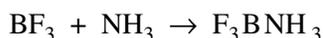
- (a) Solid calcium carbonate is strongly heated.



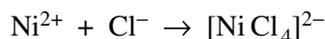
- (b) A strip of magnesium metal is placed in a solution of iron(II) chloride.



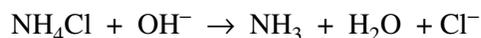
- (c) Boron trifluoride gas is mixed with ammonia gas.



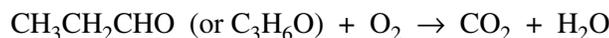
- (d) Excess concentrated hydrochloric acid is added to a solution of nickel(II) nitrate.



- (e) Solid ammonium chloride is added to a solution of potassium hydroxide.



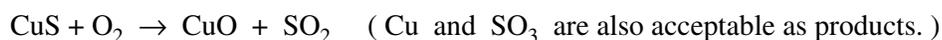
- (f) Propanal is burned in air.



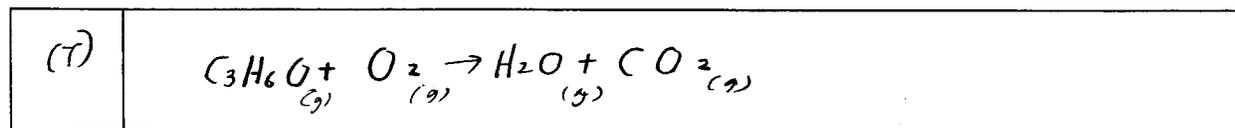
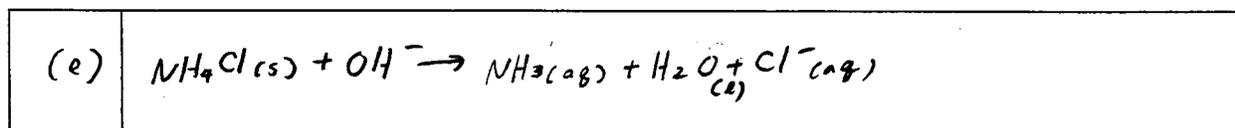
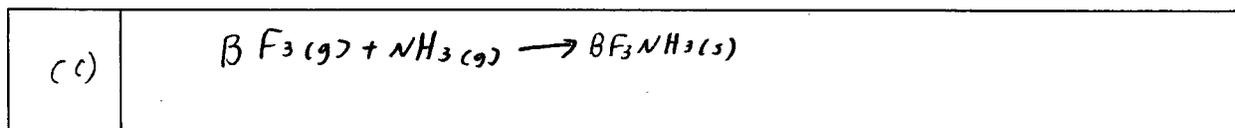
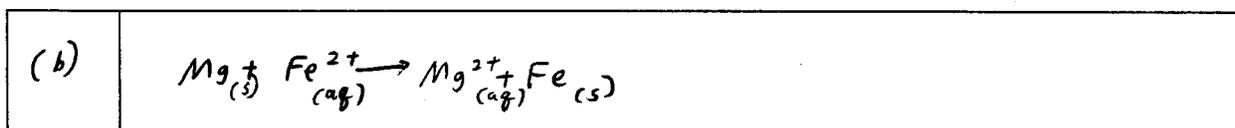
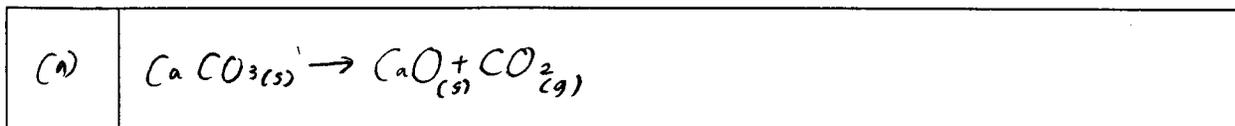
- (g) A strip of aluminum foil is placed in liquid bromine.



- (h) Solid copper(II) sulfide is strongly heated in air.

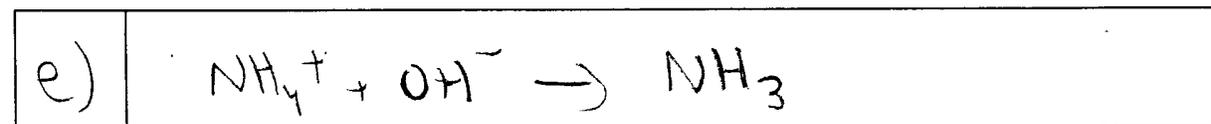
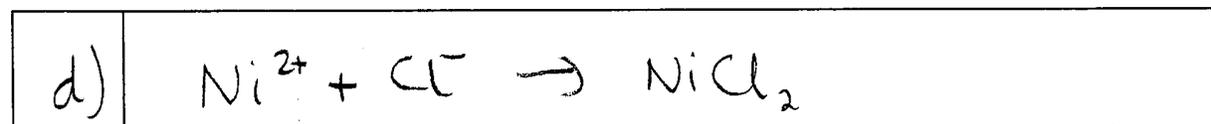
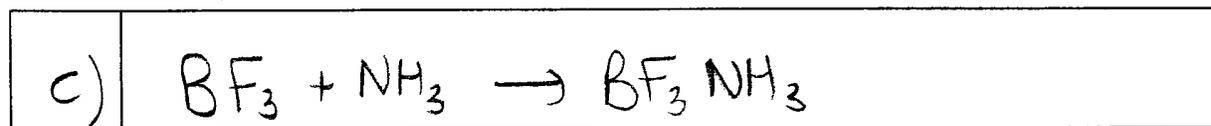
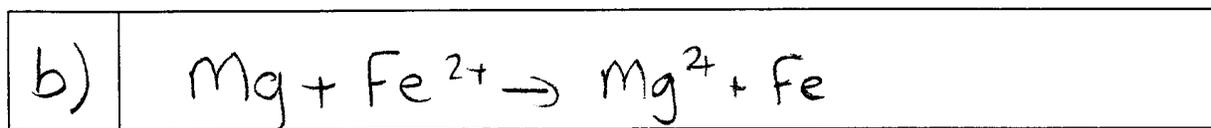
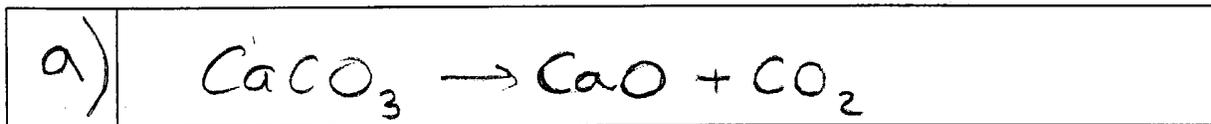


USE THIS PAGE FOR ANSWERING QUESTION 4.
 PLEASE WRITE THE LETTER FOR THE REACTION IN THE SQUARE AT THE
 LEFT END OF EACH BOX. ONLY THE ANSWERS IN THE BOXES WILL BE SCORED.



GO ON TO THE NEXT PAGE.

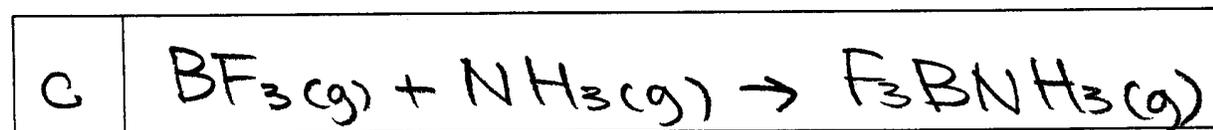
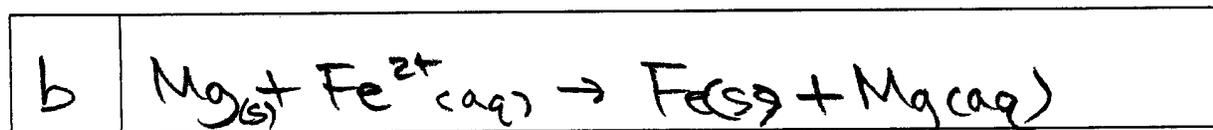
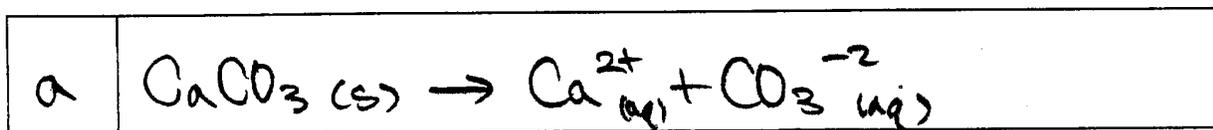
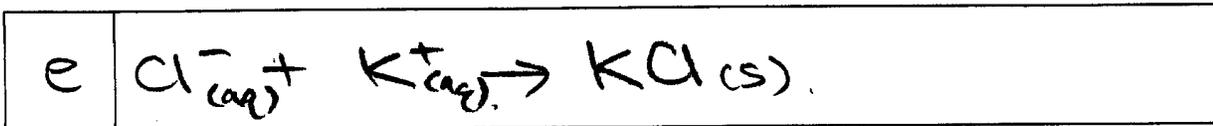
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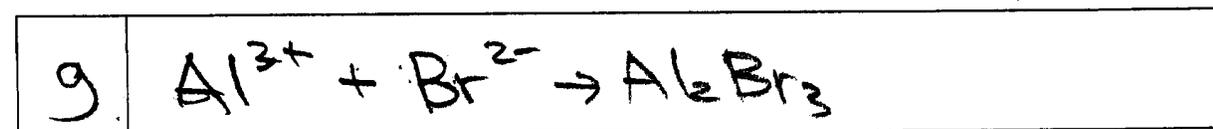
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AP[®] CHEMISTRY
2006 SCORING COMMENTARY (Form B)

Question 4

Sample: 4A
Score: 15

This response earned all 15 points. In each part, 1 point was earned for the correct reactant(s), and 2 points were earned for the correct product(s). Phase designations were not required and were ignored for scoring purposes.

Sample: 4B
Score: 11

For reaction (d) only the reactant point was earned. For reaction (e) the reactant point was not earned and only 1 product point was earned.

Sample: 4C
Score: 6

No points were earned for reactions (e) or (g). Only the reactant point was earned for reaction (a). The reactant point and 1 product point were earned for reaction (b); the second product point was not earned because Mg should have a charge.