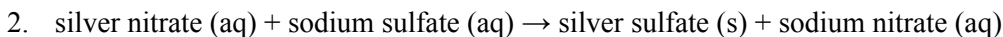
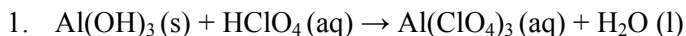


AP Chem

Quiz: Chemical Equations & Solutions (Ch 3 & 4)

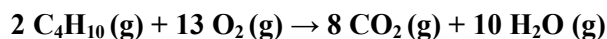
Version A (24 pts)

(4 pts) Balance the following molecular equations; reduce coefficients to smallest whole number ratio. Then, rewrite (if necessary) the equations in net ionic form. (Each: 1 pt correct coefficients, 1 pt correct net ionic equation)



3. (3 pts) Calculate the percentage by mass of oxygen in KMnO_4 . (1 pt work, 1 pt correct answer, 1 pt correct sig figs)

(6 pts) Use the balanced reaction for the combustion of butane, the fuel in “lighters”, to perform the indicated calculations.



4. How many molecules of carbon dioxide will be produced from the reaction of 4.890 g of butane and 15.92 g oxygen? (1 pt work, 1 pt correct answer, 1 pt correct sig figs)

5. Which is the limiting reactant, and what excess mass of that reactant remains when the reaction is complete? (1 pt work, 1 pt correct answer, 1 pt correct sig figs)

6. (5 pts) Polyethylene glycol (PEG), a hydrocarbon containing C, H, and O, is used in some preparations of lubricants, cosmetics, ointments, and paints. A 0.9680 g sample of PEG is combusted in excess oxygen to produce 0.8044 g of water and 1.789 g of carbon dioxide. Calculate the empirical formula of PEG. (3 pts work, 1 pt correct sig figs, 1 pt correct answer)

7. (4 pts) Describe how you would prepare 350. mL of 1.20 M CaCl_2 solution starting with a 1.70 M CaCl_2 solution. (1 pt calculations, 1 pt correct sig figs, 2 pt description)

8. (2 pts) Name a strong acid and a weak acid. Which is considered a strong electrolyte? Why?

AP Chem

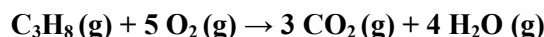
Quiz: Chemical Equations & Solutions (Ch 3 & 4)

Version B (24 pts)

(4 pts) Balance the following molecular equations; reduce coefficients to smallest whole number ratio. Then, rewrite (if necessary) the equations in net ionic form. (Each: 1 pt correct coefficients, 1 pt correct net ionic equation)

1. $\text{Sr}(\text{NO}_3)_2(\text{aq}) + \text{Li}_2\text{SO}_4(\text{aq}) \rightarrow \text{LiNO}_3(\text{aq}) + \text{SrSO}_4(\text{s})$
2. lead (II) bromide (s) + ammonium phosphate (aq) \rightarrow lead (II) phosphate (s) + ammonium bromide (aq)
3. (3 pts) Calculate the percentage by mass of oxygen in Na_2CrO_4 . (1 pt work, 1 pt correct answer, 1 pt correct sig figs)

(6 pts) Use the balanced reaction for the combustion of propane, the fuel in barbecue grills, to perform the indicated calculations.



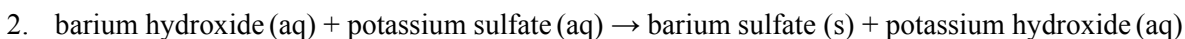
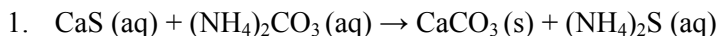
4. How many atoms of water will be produced from the reaction of 4.890 g of propane and 20.05 g oxygen? (1 pt work, 1 pt correct answer, 1 pt correct sig figs)
5. Which is the limiting reactant, and what excess mass of that reactant remains when the reaction is complete? (1 pt work, 1 pt correct answer, 1 pt correct sig figs)
6. (5 pts) Propylene glycol (PG), a hydrocarbon containing C, H, and O, is a common component of antifreeze. A 2.030 g sample of PG is combusted in excess oxygen to produce 1.923 g of water and 3.522 g of carbon dioxide. Calculate the empirical formula of PG. (3 pts work, 1 pt correct sig figs, 1 pt correct answer)
7. (4 pts) Describe how you would prepare 250. mL of 0.200 M Na_2S solution starting with a 2.60 M Na_2S solution. (1 pt calculations, 1 pt correct sig figs, 2 pt description)
8. (2 pts) Name a strong base and a weak base. Which is considered a weak electrolyte? Why?

AP Chem

Quiz: Chemical Equations & Solutions (Ch 3 & 4)

Version C (24 pts)

(4 pts) Balance the following molecular equations; reduce coefficients to smallest whole number ratio. Then, rewrite (if necessary) the equations in net ionic form. (Each: 1 pt correct coefficients, 1 pt correct net ionic equation)



3. (3 pts) Calculate the percentage by mass of hydrogen in $(\text{NH}_4)_2\text{SO}_4$. (1 pt work, 1 pt correct answer, 1 pt correct sig figs)

(6 pts) Use the balanced reaction for the reaction between sodium bicarbonate and citric acid to perform the indicated calculations.



4. How many molecules of water will be produced from the reaction of 1.00 g of sodium bicarbonate and 1.00 g citric acid? (1 pt work, 1 pt correct answer, 1 pt correct sig figs)

5. Which is the limiting reactant, and what is the mass of the excess reactant that remains when the reaction is complete? (1 pt work, 1 pt correct answer, 1 pt correct sig figs)

6. (5 pts) Vanillin, the dominant flavoring in vanilla, contains C, H, and O. A 0.8610 g sample of vanillin is combusted in excess oxygen to produce 0.405 g of water and 1.968 g of carbon dioxide. Calculate the empirical formula of vanillin. (3 pts work, 1 pt correct sig figs, 1 pt correct answer)

7. (4 pts) Describe how you would prepare a 2.00 L of a 4.00 M HCl solution starting with a 17.5 M HCl solution. (1 pt calculations, 1 pt correct sig figs, 2 pt description)

8. (2 pts) Describe the reaction that ammonia (NH_3 , a weak base) undergoes in water. Is ammonia a strong or weak electrolyte? Why?