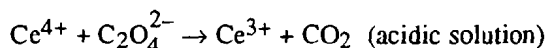


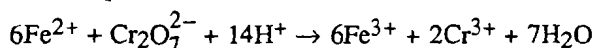
PRACTICE TEST

1. Identify each of the following substances as a strong electrolyte, a weak electrolyte or a nonelectrolyte.
a. NaBr b. HCl c. CH₃COOH d. NH₃ e. glucose
2. Write balanced *net ionic equations* for the reactions between:
a. HCl(aq) and Mg(OH)₂(aq)
b. CH₃COOH(aq) and NaOH(aq)
c. Ca(OH)₂(aq) and H₂SO₄(aq)
3. Write balanced net ionic equations for the reactions that occur when solutions of the following solutes are mixed:
a. Ba(NO₃)₂ and Na₂CO₃
b. RbCl and AgNO₃
c. Pb(NO₃)₂ and K₂S
4. Characterize the following compounds as soluble or insoluble in water.
a. Mg(OH)₂ b. AgCl c. BaSO₄
d. CaCO₃ e. Pb(NO₃)₂ f. Na₂CO₃
5. Write formulas for the acid and base whose reactions produce the following salts.
a. CuSO₄(aq) b. KBr(aq) c. Ca₃(PO₄)₂(s)
6. Write ionic and net ionic equations for the reactions that occur when solutions of the following compounds are mixed.
a. NaBr and AgNO₃
b. MgBr₂ and Pb(NO₃)₂
7. Assign oxidation numbers to the underlined elements in the following molecules and ions:
a. NO₂⁻ b. NH₃ c. HClO d. HClO₃
e. ClO₄⁻ f. H₂SO₃ g. KMnO₄ h. CH₄
i. Na₂S2O₃ j. Hg₂Cl₂ k. S₄O₆²⁻
8. Identify which of the following reactions are oxidation-reduction reactions.
a. Mg(s) + HCl(aq) → MgCl₂(aq) + H₂(g)
b. HCl(aq) + NH₃(aq) → NH₄Cl(aq)
c. Mg(s) + CO₂(g) → MgO(s) + C(s)
d. Pb²⁺(aq) + S²⁻ → PbS(s)
9. Identify the oxidizing agents and reducing agents in the following reactions:
a. S + O₂ → SO₂
b. BrO₃⁻ + 6I⁻ + 6H⁺ → 3I₂ + 3H₂O + Br⁻
c. As + H⁺ + NO₃⁻ + H₂O → H₃AsO₃ + NO
10. What is the molarity of a solution consisting of 11.8 g of NaOH dissolved in enough water to make exactly 300 mL of solution?
11. How many grams of NaCl are present in 45.0 mL of 1.25 M NaCl?
12. How many liters of 0.50 M glucose, C₆H₁₂O₆, solution will contain exactly 100 g glucose?
13. If 30 mL of 0.80 M KCl is mixed with water to make a total volume of 0.400 L, what is the final concentration of KCl?

14. When aqueous solutions of $\text{Pb}(\text{NO}_3)_2$ and Na_2SO_4 are mixed a precipitate of PbSO_4 is formed. Calculate the mass of PbSO_4 formed when 655 mL of 0.150 M $\text{Pb}(\text{NO}_3)_2$ and 525 mL of 0.0751 M Na_2SO_4 are mixed.
15. Calculate the molar concentration of Pb^{2+} ions in 500.0 mL unknown aqueous solution if 1.07 g PbSO_4 is formed upon the addition of excess Na_2SO_4 ?
16. How many mL of 0.10 M H_2SO_4 would be required to neutralize 2.5 mL of 1.0 M NaOH ?
17. In a titration experiment, a student finds that 23.6 mL of 0.755 M H_2SO_4 solution is required to completely neutralize 30.0 mL of NaOH solution. Determine the concentration of the NaOH solution.
18. If 10 mL of 1.0 M HCl are required to neutralize 50 mL of a NaOH solution, how many mL of 1.0 M H_2SO_4 will neutralize another 50 mL of the same NaOH solution?
19. Calculate the volume of 0.0300 M Ce^{4+} required to reach the equivalence point when titrating 41.0 mL of 0.0200 M $\text{C}_2\text{O}_4^{2-}$ (oxalate ion).

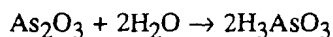


20. A sample of iron ore weighing 1.824 g is analyzed by converting the Fe to Fe^{2+} and then titrating with standard potassium dichromate?



If 37.21 mL of 0.0213 M $\text{K}_2\text{Cr}_2\text{O}_7$ was required to reach the equivalence point, what was the percent of iron in the ore.

21. KMnO_4 solution can be standardized against As_2O_3 . A 0.2661 g sample of As_2O_3 is dissolved in acidic solution.



If 38.22 mL of KMnO_4 solution is required to react with this amount of As_2O_3 , what is the molarity of the KMnO_4 solution?

