

Analytical Chemistry
3rd Long Exam

PART I. MULTIPLE CHOICE. Choose the letter that corresponds to the BEST answer. Write E when the answer is NOT in the choices. (25 pts)

1. Transfer of electrons from one reactant to another

- a. precipitation rxn
- b. half rxn
- c. redox rxn
- d. neutralization rxn

2. What is the mole ratio of Ce(IV) to NO_2^- for the oxidation of nitrite to nitrate using Ce^{4+} in the presence of an acid:



- a. 1:2
- b. 2:1
- c. 1:1
- d. 2:2

3. How many mole(s) of electron is(are) produced in the oxidation of sodium bisulfate (NaHSO_4) to BiO^+ and H^+ under acidic conditions?

- a. 1
- b. 2
- c. 3
- d. 4

4. Azide (N_3^-) was added in the determination of the dissolved oxygen in water sample to remove interferences caused by the presence of what ion?

- a. chloride
- b. fluoride
- c. nitrite
- d. nitrate

5. Which of the following statements is(are) true?

- I. Prepared KMnO_4 solutions should be stored in amber bottles
- II. KMnO_4 solutions are boiled to remove CO_2 which makes the solution basic
- III. Mn(II) is the product of the degradation of KMnO_4
- IV. KMnO_4 solutions are filtered to remove manganese(IV) oxide

- a. I only
- b. I and II
- c. I and IV
- d. I, II and III

6. What is the oxidation state of carbon in oxalic acid?

- a. +2
- b. +4
- c. +6
- d. +7

7. The complex formed between Cu(I) and 1,10-phenanthroline has a molar absorptivity of $7000 \text{ L cm}^{-1} \text{ mol}^{-1}$ at 435 nm, the wavelength of maximum absorption. What is the absorbance of a $5.17 \times 10^{-3} \text{ M}$ solution of the complex when measured in a 1.00-cm cell at 435 nm?

- a. 0.0431
- b. 0.0432
- c. 0.432
- d. 0.431

8. In the presence of iodine, thiosulfate ion is oxidized quantitatively to tetrathionate ion. What is the chemical formula of tetrathionate ion?

- a. $\text{S}_4\text{O}_7^{2-}$
- b. $\text{S}_4\text{O}_6^{2-}$
- c. $\text{S}_4\text{O}_8^{2-}$
- d. $\text{S}_4\text{O}_5^{2-}$

9. In Winkler titration, the flocc is produced from

- a. oxidation of I^- to I_2
- b. oxidation of Mn(II) to Mn(III)
- c. reduction of I^- to I_2
- d. reduction of Mn(II) to Mn(III)

10. A component of a UV-Vis spectrophotometer that restricts the radiation being measured to a narrow band that is absorbed or emitted by the analyte.

- a. light source
- b. detector
- c. radiation filter
- d. wavelength selector

11. Component of a UV-Vis instrument that operates by blocking or absorbing all but a restricted band of radiation.

- a. light source
- b. detector
- c. radiation filter
- d. wavelength selector

12. Oxidation of VO^{2+} using permanganate or cerium as standard solution produces VO(OH)_2^{+} , what is the oxidation state of vanadium in VO(OH)_2^{+} ?

Analytical Chemistry Multiple Choice Exam Questions

RC Schank



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Table of Contents Analytical Chemistry Multiple Choice Exam Questions

1. Understanding the eBook Analytical Chemistry Multiple Choice Exam Questions
 - The Rise of Digital Reading Analytical Chemistry Multiple Choice Exam Questions
 - Advantages of eBooks Over Traditional Books
2. Identifying Analytical Chemistry Multiple Choice Exam Questions
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Analytical Chemistry Multiple Choice Exam Questions
 - User-Friendly Interface
4. Exploring eBook Recommendations from Analytical Chemistry Multiple Choice Exam Questions
 - Personalized Recommendations
 - Analytical Chemistry Multiple Choice Exam Questions User Reviews and Ratings
 - Analytical Chemistry Multiple Choice Exam Questions and Bestseller Lists
5. Accessing Analytical Chemistry Multiple Choice Exam Questions Free and Paid eBooks
 - Analytical Chemistry Multiple Choice Exam Questions Public Domain eBooks
 - Analytical Chemistry Multiple Choice Exam Questions eBook Subscription Services
 - Analytical Chemistry Multiple Choice Exam Questions Budget-Friendly Options
6. Navigating Analytical Chemistry Multiple Choice Exam Questions eBook Formats

- ePub, PDF, MOBI, and More
- Analytical Chemistry Multiple Choice Exam Questions Compatibility with Devices
- Analytical Chemistry Multiple Choice Exam Questions Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Analytical Chemistry Multiple Choice Exam Questions
 - Highlighting and Note-Taking Analytical Chemistry Multiple Choice Exam Questions
 - Interactive Elements Analytical Chemistry Multiple Choice Exam Questions
- 8. Staying Engaged with Analytical Chemistry Multiple Choice Exam Questions
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Analytical Chemistry Multiple Choice Exam Questions
- 9. Balancing eBooks and Physical Books Analytical Chemistry Multiple Choice Exam Questions
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Analytical Chemistry Multiple Choice Exam Questions
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Analytical Chemistry Multiple Choice Exam Questions
 - Setting Reading Goals Analytical Chemistry Multiple Choice Exam Questions
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Analytical Chemistry Multiple Choice Exam Questions
 - Fact-Checking eBook Content of Analytical Chemistry Multiple Choice Exam Questions
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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