

# Experiment 30 Advance Study Assignment: Determination of Iron by Reaction with Permanganate—A Redox Titration

Name \_\_\_\_\_

Section \_\_\_\_\_

1. Write the balanced net ionic equation for the reaction between  $\text{MnO}_4^-$  ion and  $\text{Fe}^{2+}$  ion in acidic solution.



2. How many moles of  $\text{Fe}^{2+}$  ion can be oxidized by  $1.4 \times 10^{-2}$  moles  $\text{MnO}_4^-$  ion in the reaction in Question 1?

1 mole of  $\text{MnO}_4^-$  reacts with 5 moles of  $\text{Fe}^{+2}$   
 then  $1.4 \times 10^{-2}$  moles of  $\text{MnO}_4^-$  reacts with  $x$  moles  $\text{Fe}^{+2}$

$$x = \frac{1.4 \times 10^{-2} \text{ moles} \times 5 \text{ moles}}{1 \text{ mole}} = 7 \times 10^{-2} \text{ moles } \text{Fe}^{+2}$$

$$7 \times 10^{-2} \text{ moles } \text{Fe}^{+2}$$

3. A solid sample containing some  $\text{Fe}^{2+}$  ion had a total mass of 0.9791 g. It required 18.2 mL, 0.02034 M  $\text{KMnO}_4$  to titrate the  $\text{Fe}^{2+}$  in the dissolved sample to a pink end point.

$$\text{MnO}_4^- \text{ molarity (M)} = 0.02034 \text{ M}$$

$$\text{volume of } \text{KMnO}_4 = (V) = 18.2 \text{ ml}$$

- a. How many moles of  $\text{MnO}_4^-$  ion were required?  $= 18.2 \times 10^{-3} \text{ Liters.}$

$$\text{moles of } \text{MnO}_4^- \text{ ion required} = M \times V$$

$$= 0.02034 \frac{\text{moles}}{\text{Liter}} \times 18.2 \times 10^{-3} \text{ Lit} = 0.3701 \times 10^{-3} \text{ moles}$$

$$0.3701 \times 10^{-3} \text{ moles}$$

- b. How many moles of  $\text{Fe}^{2+}$  were present in the sample?

$$\text{mass of } \text{Fe}^{+2} \text{ ions} = 0.9791 \text{ g.}$$

$$\text{molecular weight of } \text{Fe}^{+2} = 55.8 \text{ g/mol.}$$

$$\text{moles of } \text{Fe}^{+2} = \frac{\text{mass}}{\text{molecular weight}} = \frac{0.9791 \text{ g}}{55.8 \text{ g/mol}}$$

$$\text{moles of } \text{Fe}^{+2} = 0.01754 \text{ moles.}$$

$$0.01754 \text{ moles}$$

# Advance Study Assignment Experiment 30 Answers

**Albert A Gayle**



## Advance Study Assignment Experiment 30 Answers:

Physics Laboratory Experiments Jerry D. Wilson,1986      Introduction to Chemical Principles Susan A. Weiner,Peters,Edward I. Peters,1997 This laboratory manual provides a detailed chemical overview that enables students to truly understand the function of the laboratory All experiments have been thoroughly student tested and include step by step instructions including safety and disposal methods for each      **Nuclear Science Abstracts** ,1974      Research and Advanced Technology for Digital Libraries Jose Borbinha,Thomas Baker,2003-06-26 ECDL2000 the Fourth European Conference on Research and Advanced Technology for Digital Libraries is being held this year in Lisbon Portugal following previous events in Pisa 1997 Heraklion 1998 and Paris 1999 One major goal of the ECDL conference series has been to draw information professionals stakeholders and user communities from both the research world and from dustry into a discussion of the alternative technologies policies and scenarios for global digital libraries The success of previous conferences makes them a hard act to follow The eld of digital libraries draws on a truly diverse set of scienti c and technical disciplines In the past three years moreover global cooperation on research and development has emerged as an urgent priority particularly in the new European Framework Programme and in the Digital Library Initiative in the United States Because of this diversity the eld is perhaps still struggling for an identity But this struggle for identity is itself a source of energy and creativity P ticipants in this eld feel themselves to be part of a special community with special people Each of us may claim expertise on a narrow issue with speci c projects but the choices we make and the methods we use in local solutions can have unforeseen impacts within a growing universe of interconnected resources      *Advances in Concurrent Engineering* Biren Prasad,1996-08-22      **Popular Science Monthly and World's Advance** ,1913      **Chemistry** William L. Masterton,1996-08 This new edition of CHEMISTRY PRINCIPLES AND REACTIONS continues to provide students with the core material essential to understanding the principles of general chemistry Masterton and Hurley cover the basics without sacrificing the essentials appealing to several markets Appropriate for either a one or two semester course CHEMISTRY PRINCIPLES AND REACTIONS Fifth Edition is three hundred pages shorter than most general chemistry texts and lives up to its long standing reputation as THE student oriented text Though this text is shorter in length than most other General Chemistry books it is not lower in level and with the addition of the large volume of content provided by the revolutionary GENERAL CHEMISTRY INTERACTIVE 3 0 CD ROM that is included with every copy it has a depth and breadth rivaling much longer books      **The Utah Educational Review** ,1923      *Home-study Department* University of Chicago. Home-Study Department,1908      **Chemical Principles in the Laboratory** Emil J. Slowinski,1996 Provides a series of experiments designed to teach students the available experimental methods the proper design of experiments and the interpretation of experimental results      **Research and Advanced Technology for Digital Libraries** ,2000      *Engaged Criminology* Rena C. Zito,2022-11-15 *Engaged Criminology* An Introduction invites students to learn and think like a

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## **Advance Study Assignment Experiment 30 Answers** Book Review: Unveiling the Magic of Language

In an electronic digital era where connections and knowledge reign supreme, the enchanting power of language has become more apparent than ever. Its ability to stir emotions, provoke thought, and instigate transformation is really remarkable. This extraordinary book, aptly titled "**Advance Study Assignment Experiment 30 Answers**," compiled by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we will delve into the book's central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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