

**25**

# NUCLEAR CHEMISTRY

## Practice Problems

In your notebook, solve the following problems.

### SECTION 25.1 NUCLEAR RADIATION

- What happens to the mass number and atomic number of an atom that undergoes beta decay?
- A nuclide of an element undergoes alpha particle decay. How do the atomic number and mass number of the particle change?
- Give the composition of the nucleus of the following isotopes.
  - $^{224}_{88}\text{Ra}$
  - $^{232}_{90}\text{Th}$
  - $^{201}_{81}\text{Au}$
- Complete each of the following equations.
  - $^{232}_{90}\text{Th} \rightarrow \text{?} + \text{?}$
  - $^{226}_{88}\text{Ra} \rightarrow \text{?} + \text{?}$
  - $^{234}_{90}\text{Th} \rightarrow \text{?} + \text{?}$

### SECTION 25.2 NUCLEAR TRANSFORMATIONS

- Write a nuclear equation for the following radioactive processes.
  - alpha decay of francium-223
  - electron capture by beryllium-7
  - beta emission by argon-37
  - positron emission by boron-12
- Complete the equations for these transmutation reactions.
  - $^{24}_{12}\text{Mg} + ^1_0\text{n} \rightarrow ^{24}_{12}\text{Mg} + \text{?}$
  - $^{238}_{92}\text{U} + ^1_0\text{n} \rightarrow \text{?} + ^{140}_{54}\text{Xe} + 2^1_0\text{n}$
  - $^{240}_{94}\text{Pu} + ^1_0\text{n} \rightarrow \text{?} + \text{?}$
  - $^{238}_{92}\text{U} \rightarrow ^{234}_{90}\text{Th} + \text{?} + \text{?} + 4^1_0\text{n}$
  - $^1_0\text{n} + \text{?} \rightarrow ^{137}_{52}\text{Te} + ^{93}_{40}\text{Zr} + 2^1_0\text{n}$
- Po-214 has a relatively short half-life of 164 s. How many micrograms would it take for 0.5 g of this isotope to decay to 0.25 g?
- How many days does it take for 16 g of polonium-210 to decay to 1.0 g? The half-life of polonium-210 is 137 days.
- By approximately what factor would the mass of a sample of copper-66 decrease in 50 minutes? The half-life of copper-66 is 5.48 min.
- In 5.48 minutes, 1.00 g of argon-39 decays to leave only 0.12 g. What is the half-life of argon-39?

# Study Guide Nuclear Radiation Answerd

**Julie R. Frentrup**



## **Study Guide Nuclear Radiation Answerd:**

**Study Guide with Answers to Selected Problems** H. Stephen Stoker, Danny V. White, 2003-04 This supplement includes for each chapter a brief overview activities and practice problems to reinforce skills and a practice test The answers section includes answers for all odd numbered end of chapter exercises

**Basic Concepts of Chemistry, 9e Study Guide and Solutions Manual** Leo J. Malone, Theodore O. Dolter, 2012-01-03 The 9th edition of Malone s Basic Concepts of Chemistry provides many new and advanced features that continue to address general chemistry topics with an emphasis on outcomes assessment New and advanced features include an objectives grid at the end of each chapter which ties the objectives to examples within the sections assessment exercises at the end each section and relevant chapter problems at the end of each chapter A new Math Check allows quick access to the needed basic skill The first chapter now includes brief introductions to several fundamental chemical concepts and Chapter Synthesis Problems have been added to the end of each chapter to bring key concepts into one encompassing problem Every concept in the text is clearly illustrated with one or more step by step examples Making it Real essays have been updated to present timely and engaging real world applications emphasizing the relevance of the material they are learning This edition continues the end of chapter Student Workshop activities to cater to the many different learning styles and to engage users in the practical aspect of the material discussed in the chapter

*Study Guide with Selected Solutions* Karen Timberlake, 2002-08-06 Written by the author the Study Guide is keyed to the learning goals in the text and designed to promote active learning through a variety of exercises with answers and mastery exams Also contains complete solutions to odd numbered problems

**Student Study Guide and Solutions Manual to Accompany General, Organic, and Biochemistry** Katherine J. Denniston, Denniston Katherine, 2006

**General, Organic, and Biochemistry Study Guide** Marcia L. Gillette, Ira Blei, Wendy Gloffke, George Odian, 2006-01-27 This study guide provides reader friendly reinforcement of the concepts covered in the textbook Features include Chapter outlines Are you able to Worked text problems Fill ins Test yourself Concept maps Can also be used for Blei and Odian s Organic and Biochemistry

Excel Science Study Guide, Years 9-10 Will Marchment, 2004 The book contains coverage of five major topic areas in the NSW School Certificate test Energy Force and Motion Atoms Elements and Compounds Structure and Function of Living Things Earth and Space Ecosystems Resources and Technology a chapter on Investigations and Problem Solving in Science to help with practical skills revision questions and chapter tests to help you remember important information a glossary and summary in each section of the book diagrams and illustrations to help your understanding a section to help you prepare for the School Certificate test a sample School Certificate test paper with answers answers to all questions

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presenting important topics in a way that makes the material easier to understand In this approach similarities can be exploited and concepts reinforced The result is that readers see the strong connections that exist between these three branches of chemistry

**Student Study Guide & Selected Solutions Manual** David D. Reid,2007      **Student Study Guide to accompany Chemistry** Martin Silberberg,Libby Weberg,2005-01-06      **Study Guide/Selected Solutions Manual** Julie R. Frentrop,2002-06 Contains a brief overview of every chapter review of skills self tests and the answers and detailed solutions to all odd numbered end of chapter problems in the text book

**Resources in Education** ,1973-05

**Study guide to accompany chemistry** Karen Timberlakes,1983      Study Guide for Introductory Chemistry, a Foundation, Introductory Chemistry, Basic Chemistry Iris Stovall,Steven S. Zumdahl,1996      Study Guide, Introductory Chemistry, a Foundation ; Introductory Chemistry ; Basic Chemistry Iris Stovall,Donald J. DeCoste,2000      Student Solutions Manual and Study Guide for Serway and Jewett's Physics for Scientists and Engineers, Sixth Edition John R. Gordon,Ralph V. McGrew,Raymond A. Serway,2004 Written by John R Gordon Ralph McGrew and Raymond Serway the two volume manual features detailed solutions to 20 percent of the end of chapter problems from the text This manual also features a list of important equations concepts and answers to selected end of chapter questions

**Test Items and Interactive Electronic Study Guide Questions for Starr's Biology : Concept and Applications** Larry G. Sellers,2000

Student Study Guide and Solutions Manual for Gener Al Physics Morton M. Sternheim,1986      Study Guide for Introductory Chemistry Iris Stovall,1990      Study Guide with Computer Exercises to Accompany Physics for Scientists & Engineers and Physics for Scientists & Engineers with Modern Physics, Third Edition John R. Gordon,Raymond A. Serway,1990      *General Chemistry Study Guide Sixth Edition* Darrell D. Ebbing,1999

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