## Unit 9 Outline- Thermodynamics, Reaction Rates, & Chemical Equilibrium Chapters 17 & 18

#### Essential Skills/ State Standards:

9-1. Describe how temperature and heat flow in terms of the motion of molecules (or atoms). (CSS: 7a)

9-2. Know that chemical processes & phase changes can either release energy (exothermic) or absorb energy (endothermic). (CSS: 7b, 7c)

9-3. Solve problems involving heat flow and temperature changes, using known values of specific heat (q= m · c · Δ T) & latent heat of phase change (q= m Δ H). (CSS: 7d)

9-4. Know the rate of reaction is the decrease in concentration of reactants or the increase in concentration of products with time & depends on such factors as: concentration, temperature, and pressure. (CSS: 8a, 8b)

9.5. Know the definition and role of activation energy & catalyst in a chemical reaction. (CSS: 8d\*, 8c)

9-6. Know how to use Le Chatchier's principle to predict the effect of changes in concentration, temperature, and pressure (CSS:

9-7. Know that equilibrium is established when the forward and reverse reaction rates are equal. (CSS: 9b)

#### Vecabulary.

- Condensation
- Freezing
- Vaporization
- Miching
- Bailing
   Sublimation

- Deposition
- I-Sept.
- Temperature
- Thermochemistry
- Exorthermic
- Endothermic

- Colorimeter
- · Joule
- Specific heat
- q=m ·c · △ T
- q=m Δ H emergetion
- g= m Δ H turns

- Heat of reaction
- Le Chatlier's principle
- Equilibrium
- Activation Energy
- Cotolyst

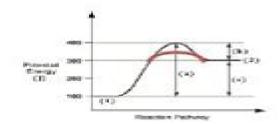
#### Study Guide (Use notes, worksheets, and labs in addition to this study guide)

- According to the collision theory, what 3 things must happen in order for two molecules to react?
   Must collide with each other, Must collide with enough energy. & in the correct orientation
- What is the importance of the activation energy in a chemical reaction? Amount of energy needed for a reaction to occur.
- Using the collision theory, explain if the following would increase/ decrease the rate of reaction:
   HCl(aq) + Mg(s) → MgCl<sub>2</sub>(aq) + H<sub>2</sub>(g)
  - a. Increase temp: Increase, molecules collide more
  - b. Increase HCI: Increase, more collisions because more reactants to collide.
- c. Increase pressure: Hard to say, wouldn't affect the reactants directly because none of them are gases.
  One of the products is a gas, so it might cause the gas particles to collide more with the reactants and could slow it down. Tough call., (this one won't be on the test).
  - d. Remove MgCl<sub>2</sub>: Increase, less products means less chance for them to interfere with reactant collisions
- e. Add H<sub>2</sub>: Decrease, more products mean they interfere more with reactants and the reactants would collide less.
- Identify the following terms with their correct letter from the graphs:
  - \* Reactants- 1

- \* Products- 2
- \* Activation energy (number/ letter & amount)-
- A (300 Joules)
- \* Is this reaction exothermic or endothermic?

#### Endothermic

 Explain how a catalyst affects the activation energy in a chemical reaction. (Also, show on the above graph what a catalyst might do). It lowers the activation energy (see on graph) Speeds it up by lowering the activation energy.



# **Reaction Rates And Equilibrium Test A Answers**

**Daniela Niemeyer** 

**Reaction Rates And Equilibrium Test A Answers:** 

The Enigmatic Realm of Reaction Rates And Equilibrium Test A Answers: Unleashing the Language is Inner Magic

In a fast-paced digital era where connections and knowledge intertwine, the enigmatic realm of language reveals its inherent magic. Its capacity to stir emotions, ignite contemplation, and catalyze profound transformations is nothing lacking extraordinary. Within the captivating pages of **Reaction Rates And Equilibrium Test A Answers** a literary masterpiece penned with a renowned author, readers attempt a transformative journey, unlocking the secrets and untapped potential embedded within each word. In this evaluation, we shall explore the book is core themes, assess its distinct writing style, and delve into its lasting affect the hearts and minds of those who partake in its reading experience.

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#### **Table of Contents Reaction Rates And Equilibrium Test A Answers**

- 1. Understanding the eBook Reaction Rates And Equilibrium Test A Answers
  - The Rise of Digital Reading Reaction Rates And Equilibrium Test A Answers
  - Advantages of eBooks Over Traditional Books
- 2. Identifying Reaction Rates And Equilibrium Test A Answers
  - 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 Reaction Rates And Equilibrium Test A Answers
  - User-Friendly Interface
- 4. Exploring eBook Recommendations from Reaction Rates And Equilibrium Test A Answers
  - Personalized Recommendations
  - Reaction Rates And Equilibrium Test A Answers User Reviews and Ratings
  - Reaction Rates And Equilibrium Test A Answers and Bestseller Lists

- 5. Accessing Reaction Rates And Equilibrium Test A Answers Free and Paid eBooks
  - Reaction Rates And Equilibrium Test A Answers Public Domain eBooks
  - Reaction Rates And Equilibrium Test A Answers eBook Subscription Services
  - Reaction Rates And Equilibrium Test A Answers Budget-Friendly Options
- 6. Navigating Reaction Rates And Equilibrium Test A Answers eBook Formats
  - ∘ ePub, PDF, MOBI, and More
  - Reaction Rates And Equilibrium Test A Answers Compatibility with Devices
  - Reaction Rates And Equilibrium Test A Answers Enhanced eBook Features
- 7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Reaction Rates And Equilibrium Test A Answers
  - Highlighting and Note-Taking Reaction Rates And Equilibrium Test A Answers
  - Interactive Elements Reaction Rates And Equilibrium Test A Answers
- 8. Staying Engaged with Reaction Rates And Equilibrium Test A Answers
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Reaction Rates And Equilibrium Test A Answers
- 9. Balancing eBooks and Physical Books Reaction Rates And Equilibrium Test A Answers
  - ∘ Benefits of a Digital Library
  - Creating a Diverse Reading Collection Reaction Rates And Equilibrium Test A Answers
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine Reaction Rates And Equilibrium Test A Answers
  - Setting Reading Goals Reaction Rates And Equilibrium Test A Answers
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Reaction Rates And Equilibrium Test A Answers
  - Fact-Checking eBook Content of Reaction Rates And Equilibrium Test A Answers
  - 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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