

Chem 167 Quiz 3 Answer Key PDF PDF

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Which of the following are types of chemical reactions?
Synthesis
Decomposition
☐ Single Replacement
Combust ion
Which factors can affect the rate of a chemical reaction?
☐ Temperature
☐ Catalyst presence
Concentration of reactants
Surface area of reactants
Which of the following statements about acids and bases are true?
☐ Acids donate protons according to Brønst ed-Lowry theory.
☐ Bases accept electrons according to Lewis theory.
Strong acids completely dissociate in water.
Bases increase the concentration of OH- ions in solution.
Which properties are periodic trends in the periodic table?
☐ Electronegativity
☐ Atomic radius
Ionization energy
☐ Electron affinity
Which of the following are characteristics of exothermic reactions?
☐ Release of heat
Negative ΔH

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□ Products have lower energy than reactants□ Absorption of heat
What is the correct balanced equation for the combustion of methane (CH ₄)?
$\bigcirc CH_4 + O_2 \rightarrow CO_2 + H_2O$ $\bigcirc CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ $\bigcirc CH_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$ $\bigcirc CH_4 + 2O_2 \rightarrow 2CO_2 + H_2O$
Which of the following is a strong acid?
Acetic acidHydrochloric acidAmmoniaSodium hydroxide
What is the molecular geometry of water (H ₂ O) according to VSEPR theory?
○ Linear○ Trigonal planar○ Bent○ Tet rahedral
Which element has the highest electronegativity?
Oxygen Fluorine Chlorine Nitrogen
What is the main product of the reaction between an acid and a base?
Salt and waterCarbon dioxide and waterHydrogen gasOxygen gas

Explain how Le Chatelier's principle can be used to predict the effect of changing conditions on a chemical equilibrium. Provide an example to illustrate your explanation.

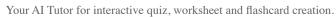
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Describe the process of calculating the enthalpy change (ΔH) for a reaction using Hess's Law. Include a step-by-step approach with a hypothetical reaction.	
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Discuss the differences between ionic and covalent bonds. Include examples of each and expl how these differences affect the properties of the compounds formed.	ain
	//
	10
	/,
Analyze the impact of temperature on the solubility of gases in liquids. How does this relate to world phenomena such as carbonated beverages?	real-
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Evaluate the role of catalysts in chemical reactions. How do they affect the activation energy and rate of reaction? Provide examples of industrial applications.	l the
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Which of the following are examples of intermolecular forces?	
☐ Hydrogen bonding	
☐ Injuriogen boriding ☐ Ionic bonding	
☐ Dipole-dipole interactions	
☐ London dispersion forces	
Which of the following are characteristics of a dynamic equilibrium?	
☐ The forward and reverse reactions occur at the same rate.	
☐ The concentrations of reactants and products remain constant.	
☐ The system is static and unchanging.	
☐ The equilibrium can be shifted by changing conditions.	
Which statements about the pH scale are correct?	
☐ A pH of 7 is neutral.	
A pH less than 7 is acidic.	
A pH greater than 7 is basic.	
A pH of 0 is the strongest base.	
What is the primary reason for the increase in atomic size down a group in the periodic table?	
○ Increase in nuclear charge	
Addition of electron shells	
○ Increase in electronegativity	
O Decrease in ionization energy	

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Which of the following elements is a noble gas?



olain the concept of activation energy and its importance in chemical kinetics. How can it be ered in a reaction?
cuss the significance of stoichiometry in chemical reactions. How does it help in predicting the ounts of reactants and products involved?
Attraction between oppositely charged ions
Sharing of electrons Formation of ions
at is the main characteristic of a covalent bond? Transfer of electrons
at in the wain above to visit of a constant board0
Chlorine
Argon
Oxygen Nitrogen

Describe the process of determining the empirical formula of a compound from its percent composition. Provide a detailed example.



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Analyze the environmental impact of combustion reactions. What are some strategies t	to mitigate
heir negative effects?	_
	//
Evaluate the use of the periodic table as a tool for predicting chemical behavior. How discount is this production?	o periodic
rends assist in this prediction?	
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