

Unit 7 and 8 Review Quiz: Accel Chemistry

- According to kinetic molecular theory, particles of matter are...
 - In constant random motion**
 - Have different shapes
 - Have different colors
 - Are always fluid
- The kinetic molecular theory explains the behavior of...
 - Gases only**
 - Solids and liquids
 - Liquids and gases
 - Solutions and gases
- What are the values of standard temperature and pressure (STP)?
 - 273 and 1 kPa
 - 273 and 1 atm**
 - 273°C and 1 atm
 - 0°C and 1 kPa
- Suppose the temperature of air in a balloon is increased. If the pressure remains constant, what quantity must change?
 - Volume**
 - Number of molecules
 - Compressibility
 - Adhesion
- The gas pressure inside a container decreases when...
 - The number of gas molecules is increased
 - The number of gas molecules is decreased**
 - The temperature is increased
 - The number of molecules is increased and the temperature is increased
- A reaction that is spontaneous...
 - Is very rapid
 - Will process without outside intervention**
 - Is also spontaneous in the reverse direction
 - Has an equilibrium position that lies far to the left
- The entropy of the universe is...
 - Constant
 - Continually decreasing
 - Continually increasing**
 - Zero
- Which of the following processes produces a decrease in the entropy of the system?
 - Boiling water to form steam
 - Dissolving solid KCl in water
 - Mixing of two gases into 1 container
 - Freezing water to form ice**
- Which of the following produces an increase in the entropy of a system?
 - $\text{Ag}^+ (\text{aq}) + \text{Cl}^- (\text{aq}) \rightarrow \text{AgCl} (\text{s})$
 - $\text{CO}_2 (\text{s}) \rightarrow \text{CO}_2 (\text{g})$**
 - $\text{H}_2 (\text{g}) + \text{Cl}_2 (\text{g}) \rightarrow 2\text{HCl} (\text{g})$
 - $\text{N}_2 (\text{g}) + 3\text{H}_2 (\text{g}) \rightarrow 2\text{NH}_3 (\text{g})$
 - $\text{H}_2\text{O} (\text{l}) \rightarrow \text{H}_2\text{O} (\text{s})$
- An endothermic reaction...
 - Will not proceed
 - Releases heat to the surroundings
 - Absorbs heat from the surroundings**
 - Has a negative ΔH value
- An exothermic reaction
 - Absorbs heat
 - Will always be fast
 - Will always be slow
 - Has a negative ΔH value**
- When ammonium chloride, NH_4Cl , is dissolved in water, the water temperature drops. Which of the following statements are true?
 - the products contain more heat than the reactants
 - the reaction is exothermic
 - the reaction is endothermic**
 - a chemical change has occurred
- A 5.0 L container holds 28 g N_2 gas at 100°C. What is the pressure in atm?
 - 171 atm
 - 61.2 atm
 - 3.28 atm
 - 6.12 atm**

14. How much heat is required to vaporize 100 g of liquid ethanol, C_2H_5OH , at its boiling point? ($\Delta H_{vap} = 38.6$ kJ/mol)
- a. 0.0563 kJ
 - b. 85.8 kJ
 - c. **83.9 kJ**
 - d. 2.59 kJ
15. Which statement correctly describes an endothermic chemical reaction?
- a. The products have higher potential energy than the reactants, and the ΔH is negative.
 - b. **The products have higher potential energy than the reactants, and the ΔH is positive.**
 - c. The products have lower potential energy than the reactants, and the ΔH is negative.
 - d. The products have lower potential energy than the reactants, and the ΔH is positive.
16. What is the ΔH for the following reaction: $H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$
- a. **-184.6 kJ**
 - b. -334.318 kJ
 - c. -92.3 kJ
 - d. not enough information
17. The addition of 9540 J of heat is required to raise the temperature of 225.0 g of a liquid hydrocarbon from 20.5°C to 45.0°C. What is the heat capacity of this hydrocarbon?
- a. 0.94 J/g°C
 - b. **1.73 J/g°C**
 - c. 1.88 J/g°C
 - d. 9.42 J/g°C
18. The symbol for the change in enthalpy is...
- a. **ΔH**
 - b. ΔS
 - c. ΔE
 - d. ΔG
19. An endothermic reaction...
- a. **has a positive ΔH**
 - b. has a negative ΔH
 - c. **absorbs energy**
 - d. is always spontaneous
20. If I initially have a gas at a pressure of 12 atm, a volume of 23 liters, and a temperature of 200 K, and then I raise the pressure to 14 atm and increase the temperature to 300 K, what is the new volume of the gas?
- a. 0.0644 L
 - b. 5796 L
 - c. 414 L
 - d. **29.6 L**
21. How much heat will be released when 8.00 g of sulfur reacts with excess O_2 according to the following equation?
 $2S + 3O_2 \rightarrow 2SO_3$ ($\Delta H = -791.4$ kJ)
- a. -98.9 kJ
 - b. -198 kJ
 - c. **98.9 kJ**
 - d. 198 kJ
22. A reaction has $\Delta H^\circ = -200.3$ kJ and $\Delta S^\circ = -77.0$ J/K at 298 K. Is this reaction spontaneous?
- a. **Yes, spontaneous**
 - b. No, nonspontaneous
23. How many liters of H_2 can be produced at 300. K and 1.03 atm if 20.0g of sodium metal is reacted in the following equation: $2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$
- a. 41.6 L
 - b. 20.8 L
 - c. 478 L
 - d. **10.4 L**