Chemistry 201 - Practice Exam Two Summer 2009

1.	60.0 g of a certain gas occupies 106 L at 300.0°C and 720.0 torr. The gas could be which of the following?										
	a. Cl ₂	b. H ₂	(c. N ₂)	d. HCl	e. none of these						
2.	The density of ethane (C ₂ H ₆) at 25°C and 1.10 atm pressure is:										
	a. 1.15 g/L	b. 1.20 g/L	c. 1.25 g/L	d. 1.30 g/L	e. 1.35 g/L						
3.	• .				at 20.0°C. The temperature rose to						
(a. 0.24 J/g°	b. 0.48 J/g°	is a perfect insulator, v c. 0.72 J/g°	d. 0.96 J/g°	e. none of these						
4.	Calculate the amount of heat evolved in the complete oxidation of 6.44 g of Aluminum at 25°C and 1.00 atm pressure.										
	a. 50.0 kJ	b. 100. kJ	c. 200. kJ	d. 400. kJ	e. 800. kJ						
5.	a. has a higher sp b. has a lower spe	ecific heat than som	cools off quickly: nething that heats up s ething that heats up slo ething that heats up slo	owly and cools off slo	owly.						
6.	What is the molar a. 175 J/mol ^o	heat capacity of he b. 200. J/mol ^o	c. 225 J/mol ^o	ific heat is 2.25 J/g°? d. 250. J/mol°	e. 300. J/mol°						
7.	<u> </u>		me of 20.5 L at 0.92 atr . What is the final press c. 0.57 atm		olume of 34.6 L. During e. none of these						
8.	Which of the follo a. nitrogen	wing gases can be u b. oxygen	used as a fuel? c. carbon dioxide	d. hydrogen	e. all of these						
9.		of acetylene gas are t 1.00 atm and 25.0%		tion of excess water	with 5.00 g of calcium						
	a. 1.91 L		c. 1.27 L RT/p = (0.079	d. 0.524 L 3D)(0.0821) (298)	e, none of these						
10.			40 g of KSCN in enough								
	a. 0.0440 M	b. 0.0543 M	c. 0.129 M	d. 0.133 M	e. none of these						
11.	. A sample of 10.6 g of KNO ₃ is dissolved in 251.0 g of water at 25.0°C in a calorimeter. The maximum temperature of the well mixed solution was recorded to be 21.5°C. What is the molar heat of solution of potassium nitrate?										
	a. +3.8 kJ/mol	b3.8 kJ/mol	c. +35 kJ/mol	d37 kJ/mol	e. none of these						
12.		etermine the heat of	es at high temperature freaction for 1.00 mole								
	a. +2240 kJ/mol	b966 kJ/mol	c. 394 kJ/mol	d. +178 kJ/mol	e. none of these						

		a. 933 m/s	b. 966 m/s	(c. 890. m/		d. 0.00103 m/s	e. 50.0 m/s	
	14.		e following compo m is 0.333, and the					
		a. He	(b. CH ₄)	c. CO ₂	d. they o	all have the same	e partial pressure	
	15.	Under what set of conditions is a gas most likely to exhibit ideal gas behavior? a. low pressure and low temperature b. low pressure and high temperature c. high pressure and low temperature d. high pressure and high temperature e. gases always exhibit ideal gas behavior						
		Part Two Using complete sentences, briefly explain what is meant by the terms "endothermic chemical reaction" and "exothermic chemical reaction". An exothermic reachen releases had to the environment. The enthalpy change for the reachen is regarive. On endothermic reachen absorbs hour from the surround that a positive set.						
		$2Ba(s) + O_2(g) -$	 2BaO(s) ΔH° = -1 ½O₂(g) → BaCO₃ 	107.0 kJ		et e		ıl.
		Reaction: BaCC	above, calculate $O_3(s) \rightarrow BaO(s) + Co$	20/01				
		Bac	03 -> Ba	+ (02 +)	202	+8220	5	
		Ba	$0_3 \rightarrow Ba$ $+ \frac{1}{2}02 \rightarrow 1$	Bao		-1107.0 Z	= -553.	5
	3.	Data:	$(g) \rightarrow 16CO_2(g) +$				09.0KJ	and the second s
			lpies of formation, J/mol; H ₂ O(I), -285					
16.3	93.5	Use the above of + 18. 18 2.	data to calculate that $Af_{OCMNE} = -$	the standard enti	nalpy of forn Idf:	n ation of octane = - 240,4/2 5144 4	$C_8H_{18}(I)$. = -120.2	KJ 12000
		A sample of hyd	drogen gas was co	ollected over wat	er at 36 °C c	and 855 mmHg. T	he volume of the	

torr at 36 °C)

 $N = \frac{PV}{RT} = \frac{(855-44.6)(6.50)}{760}(6.50) = 0.273 \text{ mol } H_2$ (0.0821)(309)

13. What is the rms velocity (average speed of effusion) for water vapor at 300.°C?