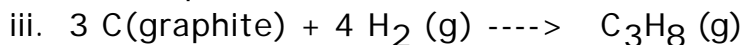
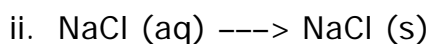
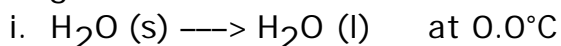


CHM 1046 Exam 3 Practice Test
Spring 2000
Palmer Graves, Instructor

- 1: What is the pH of a solution in which 0.30 mole HNO_2 and 0.25 mole NaNO_2 are dissolved in enough water to make 250 mL of solution?
(K_a for $\text{HNO}_2 = 4.5 \times 10^{-4}$)
A: 3.12 B: 3.27 C: 3.35 D: 4.50 E: 5.22
- 2: What is the pH of a solution after titrating 40.0 mL of a 0.250M KOH solution with 50.0 mL of a 0.180 M HBr solution?
A: 1.95 B: 3.00 C: 7.00 D: 11.00 E: 12.05
- 3: Which of the following statements lists the correct pH range which would result from a titration of the indicated acid base pair at the equivalence point.
A: $\text{pH} > 7$; HClO_3 and KOH B: $\text{pH} = 7$; NH_4Br and NaOH
C: $\text{pH} > 7$; CH_3COOH and NaOH D: $\text{pH} > 7$; HCl and NH_3
E: $\text{pH} < 7$; HCl and NaOH
- 4: Calculate the pH of the solution at the equivalence point of the titration of 50.0 mL of 0.10 M formic acid with 0.10M NaOH.
A: 6.75 B: 7.00 C: 7.72 D: 8.27 E: 8.98
- 5: Which of the following statements are true?
i. An exothermic process is always spontaneous
ii. Reactions that have a positive value for $\Delta H^\circ_{\text{rxn}}$ and a negative value of $\Delta S^\circ_{\text{rxn}}$ are not spontaneous at any temperature
iii. Reactions for which $\Delta G^\circ_{\text{rxn}} < 0$ are always product favored.
A: i only B: ii only C: iii only D: i and iii E: ii and iii

6: For which of the following reactions will the value of ΔS° be negative?

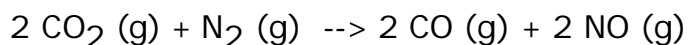


A: i only B: ii only C: iii only D: i and ii E: ii and iii

7: What is the maximum pH value that could be obtained from a Cu(OH)_2 solution given that $K_{sp} = 1.6 \times 10^{-19}$?

A: 14 B: 13.5 C: 12.3 D: 10.2 E: 7.8

8: What is the free energy change for the reaction:



free energies of formation (kJ/mol): 86.6 (NO); -137.2 (CO); and -394.4 (CO_2)

A: -688 kJ B: -343.8 kJ C: 348.8 kJ

D: 688 kJ E: -1236 kJ

9: Suppose that a reaction has a $\Delta H = 50 \text{ kJ}$ and $\Delta S = 170 \text{ J/K}$. At what temperature, if any, will the reaction be in equilibrium?

A: 21°C B: 298K C: 274°C D: 29°C E: 335K

10: Quicklime, CaO , is produced by heating limestone, CaCO_3 by the following reaction.



If the reaction becomes spontaneous above 841°C , what is the value of ΔS for the reaction?

A: 212 J/K B: 0.160 J/K C: 160 J/K

D: 0.212 J/K E: None of the above

Answer Sheet for Test "Practice test 3", 4/1/0

CHM 1046 Exam 3 Practice Test

Spring 2000

Palmer Graves, Instructor

Chapter/ Test Correct

Question Question Answer

16-1	(-,a,-)	1	B
16-2	(-,d,-)	2	E
16-3	(-,a,-)	3	C
16-6	(-,c,-)	4	C
17-1		5	E
17-3		6	E
16-9	(-,d,-)	7	E
17-9		8	D
17-14		9	A
17-17		10	C

Statistics for Test "Practice test 3". Total questions: 10

<u>Key Word</u>	<u>Total</u>	<u>Difficulty Level</u>	<u>Total</u>	<u>Question Type</u>	<u>Total</u>
None	10	None	5	Free format	0
		a) Easy	2	True or False	0
		b) Moderate	0	Multiple choice	10
		c) Hard	1	Matching	0
		d) Max. Dif.	2		