<b>C</b> , <b>v</b> Pract	Practice Quiz [Ch-14: Acids and Bases] 75 Questions		NAME :	
75 QI				
1.	Which of the following could NOT act as a Bronsted- Lowry acid?			
Ą	H <sub>2</sub> SO <sub>4</sub>	В	HCN	
-	$NH_4^+$	D	CN-	
2.	Which of the following compounds could never act as a Bronsted-Lowry acid?			
Ą	H <sub>2</sub> SO <sub>4</sub>	В	50 <sub>4</sub> <sup>2-</sup>	
	NH4 <sup>+</sup>	D	HSO4-	
3.	In the equation: HF + $H_2O \rightarrow H_3O^+ + F^-$			
À	$H_2O$ is a base and HF is its conjugate acid.	В	$H_2O$ is an acid and HF is the conjugate base.	
	HF is a base and $H_3O^+$ is its conjugate acid.	D	HF is an acid and F <sup>-</sup> is its conjugate base.	
4. <sup>-</sup>	The correct formula for hydrobromic acid			
4	HBrO <sub>3</sub>	В	НВ	
	HBr	D	HBO <sub>3</sub>	
5	The correct name for $HC_2H_3O_2$			
4	hydroacetate	В	acetous acid	
	acetic acid	D	hydroacetic acid	
6. '	Which answer choice best describes a substance with	a pH of	f 2?	
Α ,	A strong base	В	A strong acid	
	A weak acid	D	A weak base	
7. '	What is the formula for Sulfurous Acid?			
À	H <sub>2</sub> S	В	H <sub>2</sub> SO <sub>4</sub>	
5	H <sub>2</sub> SO <sub>3</sub>	D	HSO	

8.	Name the reaction between dilute sulfuric acid and sodium hydroxide solution.			
Α	Neutralization	В	Decomposition	
С	Displacement	D	Combustion	
9.	Which of the following is a characteristic of an acid?			
Α	sour	В	slippery	
С	bitter	D	releases hydroxide ions in water	
10.	if the [H+] of a solution is 8.4 x $10^{-3}$ M the pOH of the	solutior	a will be	
A	12.98	В	1.02	
С	11.92	D	2.08	
11.	Limes have a $[H_3O^+]$ of 1.3 x 10 <sup>-2</sup> M. Their pOH is			
Α	12.11	В	12.97	
С	1.03	D	1.89	
12.	12. Calculate the pH of a solution whose hydrogen ion concentration is 3.65 x 10 <sup>-5</sup> M?			
A	4.44	В	5.06	
С	7.15	D	13.3	
13.	The pH of an unknown solution is 6.35. What is the hy	drogen	ion concentration of this solution?	
Α	1.0 x 10 -7 M	В	3.36 x 10 -9 M	
С	4.47 x 10 -7 M	D	9.4 x 10 -8 M	
14.	What is the pH if the [OH <sup>-</sup> ] is 4.0 x 10 <sup>-11</sup> M?			
A	1.45	В	10.78	
С	3.60	D	6.67	
15.	SolutionpHThe table shows the pH of severalvinegar2.5milk6.5water7.0bleach12.5	l solutio	ns. Which solution is the most acidic?	
A	vinegar	В	milk	
С	water	D	bleach	

16.	Four substances were tested for pH, lemon juice (pH the following correctly lists the substances from most	2), bakin basic to	g soda (pH 9), bleach (pH 12), and milk (pH 6). Which of acidic?
A	bleach, baking soda, milk, lemon juice	В	milk, lemon juice, baking soda, bleach
С	lemon juice, milk, baking soda, bleach	D	baking soda, bleach, lemon juice, milk
17.	An unknown substance was tested and found to have very low concentration of hydronium ions, $\rm H_3O^+$ . Which	e an extr ch pH w	emely high concentration of hydroxide ions, OH <sup>-</sup> . and ould make the most sense?
A	pH = 2	В	pH = 8
С	рН = 12	D	рН = 6
18.	What is the fomula of carbonic acid?		
A	HCO <sub>3</sub>	В	H <sub>2</sub> CrO <sub>4</sub>
С	H <sub>2</sub> CO <sub>3</sub>	D	$H_2C_2O_4$
19.	What is the formula of chlorous acid?		
A	HCIO	В	HCI
С	HClO <sub>3</sub>	D	HClO <sub>2</sub>
20.	The name of the acid with the formula HF is		
A	fluorate acid	В	hydrogen fluoridic acid
С	flouric acid	D	hydrofluoric acid
21.	What is the formula for phosphorous acid?		
A	H <sub>2</sub> PO <sub>4</sub>	В	H <sub>3</sub> PO <sub>4</sub>
С	H <sub>3</sub> PO <sub>3</sub>	D	H <sub>3</sub> P
22.	SolutionpHThe table shows the pH of several (amount) of OH- ions?vinegar2.5milk6.5water7.0bleach12.5	l solutio	ns. Which solution has the greatest concentration
A	milk	В	water
С	vinegar	D	bleach

23.	Bases, also known as  (a) They taste  (d)	will turn litmus paper ·	(b)	This is because they have a pH (c)
A	H+	В	]	sour
С	alkali and OH-	D	]	above 7
Ε	below 7	F	]	bitter
G	blue	Η	]	red
24.	Acids, also known as  (a) , They taste  (d)	, will turn litmus paper ·	. (b)	This is because they have a pH (c)
A	blue	В	]	below 7
С	H+	D		red
Ε	bitter	F		above 7
G	sour			
25.	Strong acids and bases			
A	do not break apart into ions (non-ele	ectrolyte) B		completely break apart into ions (non-electrolyte)
С	partially break apart into ions (weak	electrolyte) D		completely break apart into ions (strong electrolyte)
26.	Which of these solutions, all with a co	oncentration 0.2 M, wi	ll ha	ve the highest pH?
A	H <sub>2</sub> SO <sub>3</sub> Ka = 1.2 x 10 <sup>-2</sup>	В		H <sub>3</sub> O <sup>+</sup> Ka = 55.5
С	HF Ka = 7.2 x 10 <sup>-4</sup>	D	]	benzoic acid Ka = 6.3 x 10 <sup>-5</sup>
27.	Which of these weak acids is the stro	ongest?		
A	H <sub>3</sub> O <sup>+</sup> Ka = 55.5	В	]	HF Ka = 7.2 x 10 <sup>-4</sup>
С	benzoic acid Ka = 6.3 x 10 <sup>-5</sup>	D	]	H <sub>2</sub> SO <sub>3</sub> Ka = 1.2 x 10 <sup>-2</sup>
28.	Which of these bases is the weakest?	?		
A	CN <sup>-</sup> Kb = 2.5 x 10 <sup>-5</sup>	В		OH <sup>-</sup> Kb = 55.5
С	NH <sub>3</sub> Kb = 1.8 x 10 <sup>-5</sup>	D		$F^{-}$ Kb = 1.4 x 10 <sup>-11</sup>
29.	A solution prepared with the base Cl the solution.	<sup>∿-</sup> (Kb = 2.5 x 10 <sup>-5</sup> ) has	a co	ncentration of 0.25 M of the base. Calculate the pH for
A	2.6	В		4.6
С	9.4	D	]	11.4

30. A solution contains 0.04 M of a weak acid. Calculate the pH of the solutionknowing that the Ka for the acid is 1.6 x 10<sup>-7</sup>

A	Because the Ka is very small, the pH is close to neutral (about 6)	В	4.9
С	It is not possible to solve if the identity of the acid is no known	t D	4.1
31.	Which of the following would be a weak base?		
A		В	
С		D	
32.	Which of the following would be the strongest acid		
A	NaOH	В	Ca(OH) <sub>2</sub>
С	HCI	D	H <sub>2</sub> SO <sub>4</sub>
33.	The following neutralization reaction occurs in the class HCl + KOH> $H_2O$ + KCl If a student uses 25.0 mL of a 0.5M solution of KOH, wh	sroom. nat is th	e molarity of the acid if 15.0mL of acid neutralized?
A	1.2M	В	12.5M
С	0.8M		
34.	What allows us to know when the end point has been r	eached	?
A	Turns to a solid	В	Bubbles
С	Feels warm	D	indicator changing color
35.	acid + base _>		
A	salt + carbon dioxide + water	В	salt
С	salt + hydrogen	D	salt + water

36.	What is this piece of apparatus cal	lled	
A	Pipette	В	Cuvette
С	Burette	D	Janette
37.	Why do we perform a titration?		
A	To find the molar mass of an unknown solution	В	To determine the concentration of an unknown solution
С	To see if a reaction will occur between an acid and bas	e D	To find the mass of an unknown acid
Ε	To calculate the viscosity of the solution		
38.	What are some things we will need for a titration?		
Α	A burette	В	A solution of known concnetration
С	mass balance	D	a bunsen burner
Ε	indicator		
39.	If it takes 54 mL of 0.1 M NaOH to neutralize 125 mL o you answer with the correct unit)	f an HC	l solution, what is the concentration of the HCl? (record
Α	0.043 M	В	0.034 M
С	0.77 M	D	0.065 M
40.	A 25.0 mL sample of HCl was titrated to the endpoint v	with 15	0 mL of 2.0 M NaOH. What is the molarity of HCl?
A	0.6 M HCI	В	1.6 M HCl
С	0.03 M HCl	D	1.2 M HCI
41.	What is the endpoint of a titration		
A	Where there is no base	В	Where the amount of acid and base are balanced according to the equation
С	At the end		
42.	A 50.0 mL sample of Ca(OH) <sub>2</sub> is neutralized by 300.0 m Ca(OH) <sub>2</sub> solution.	L of H	I solution with a pH of 1.3. Calculate the molarity of the
Α	1.0 M	В	0.30 M
С	0.15 M	D	0.50 M

43.	Which of the following represents	an Acic	?
A	pOH = 3	В	рОН = 12
С	[H <sup>+</sup> ] = 2.3 x 10 <sup>-10</sup>	D	рН = 12
44.	Which of the following statements is correct about an (i) Higher the pH, stronger the acid (ii) Higher the pH, weaker the acid (in) Lower the pH, stronger the base (iv) Lower the pH, weaker the base	aqueou	is solution of an acid and of a base?
Α	(d) (ii) and (iv)	В	(c) (i) and (iv)
С	(b) (ii) and (iii)	D	(a) (i) and (iii)
45.	$CO_3^{2-}(aq) + H_2O(I) \rightarrow HCO_3^{-}(aq)+OH^{-}(aq)$ Using the above reaction, which compound is the $c$	conjuga	ite base?
A	HCO <sub>3</sub> -	В	CO <sub>3</sub> <sup>2-</sup>
С	H <sub>2</sub> O	D	OH-
46.	A Bronsted Lowry base:		
A	produces H+	В	donates H+ to another substance
С	produces OH-	D	accepts H+ from another substance
47.	In the equation below, what is the Bronsted Lowry HCl + NH <sub>3</sub> > Cl <sup>-</sup> + NH <sub>4</sub> <sup>+</sup>	v acid?	
A	HCI	В	$NH_4^+$
С	NH <sub>3</sub>	D	Cl <sup>.</sup>
48.	Name the products of the following reaction: Calcium carbonate + Hydrochloric acid		
A	calcium chloride + hydrogen	В	calcium chloride + carbon dioxide + water
С	calcium carbonate + carbon dioxide	D	calcium chloride + water
49.	Phenolophalein turns from clear to pink when the pH	turns	
A	ionic	В	basic
С	acidic	D	saline

50.	Potassium carbonate reacts with an acid Y to form pot for this reaction?	assium	nitrate, water and carbon dioxide. What is the acid used
A	HNO <sub>3</sub>	В	HCI
С	H <sub>2</sub> SO <sub>4</sub>		
51.	Sulfuric acid reacts with sodium hydroxide to form salt	X and	water. Name the salt.
A	sodium sulfate	В	sodium chloride
С	sodium nitrate		
52.	Which of the following is true about acids and bases?		
A	The higher the pH, the weaker the base	В	The lower the pH, the more neutral the acid
С	The lower the pH, the stronger the acid	D	the higher the pH, the stronger the acid
53.	Salts that produce solutions hav	'e	ions that release hydrogen ions to water.
A	acidic/negative	В	basic/positive
С	acidic/positive		
54.	Salts that produce solutions hav	'e	ions that attract hydrogen ions from water.
A	basic/positive	В	acidic/positive
С	basic/negative		
55.	What is the conjugate base of HCO <sub>3</sub> -?		
A	H <sub>2</sub> CO <sub>3</sub>	В	H <sub>2</sub> CO <sub>3</sub> <sup>-</sup>
С	CO3 <sup>2-</sup>	D	HCO <sub>3</sub> -
56.	Which of the following represents the chemical formul	a for hy	/dronium?
A	H⁺	В	OH-
С	H <sub>3</sub> O <sup>+</sup>	D	H <sub>2</sub> O
57.	WHen 200 mL of 2.0 M NaOH(aq) is added to 500 mL o	f 1.0 M	HCl(aq), the pH of the resulting mixture is closest to
A	1.0	В	3.0
С	13.0	D	7.0
58.	Which of the following is a Brønsted-Lowry base but <b>n</b> o	ot an Ai	rhenius base?
A	NaOH	В	Ca(OH) <sub>2</sub>
С	NH <sub>3</sub>	D	КОН

59.	If K < Q, which part of the reaction will begin to happen	n?	
A	reverse	В	none
С	forward		
60.	Which of the following is a conjugate acid/base pair?		
A	H <sub>2</sub> SO <sub>4</sub> /SO <sub>4</sub> <sup>2-</sup>	В	NH4 <sup>+</sup> /NH3
С	HCI/OCI <sup>-</sup>	D	H <sub>3</sub> O <sup>+</sup> /OH <sup>-</sup>
61.	Calculate the pH of a 0.47M NH <sub>3</sub> (K <sub>b</sub> = 1.8 x 10 <sup>-5</sup> ) soluti	on.	
A	11.46	В	2.54
С	5.07	D	8.93
62.	When the chemical reaction A + B $\leftrightarrow$ C+ D is at equilibr	rium,	
A	all four concentrations are equal.	В	the sum of the concentrations of A and B equals the sum of the concentrations of C and D.
С	neither the forward nor the reverse reactions have stopped.	D	both the forward and reverse reactions have stopped.
63.	In which of the following aqueous solutions does the v	veak ac	id exhibit the highest percentge of ionization?
A	.01 M HC <sub>2</sub> H <sub>3</sub> O <sub>2</sub> . (K <sub>a</sub> 1.8 x 10 <sup>-5</sup> )	В	.01 M HClO . (Ka= 3.0 x 10 <sup>-8</sup> )
С	.01 M HNO <sub>2</sub> . ( Ka =4.5 x 10 $^{-4)}$	D	.01 M HF (Ka= 6.8 x 10 <sup>-4</sup> )
64.	Which of the following ions will act a weak base in wat	er?	
A	NO <sub>3</sub> -1	В	CIO <sup>-1</sup>
С	CI <sup>-1</sup>	D	OH <sup>-1</sup>
65.	A .1 M solution of will have a pH of 7.00.		
A	Na <sub>2</sub> S	В	NaNO <sub>3</sub>
С	NaF	D	KF
66.	Which species in the equation below are behaving as $E_{\rm NH_3}$ + $H_2O \leftrightarrows {\rm NH_4^+}$ + $OH^-$	Bronste	d-Lowry ACIDS?
A	$NH_3$ and $H_2O$	В	$NH_4^+$ and $OH^-$
С	$H_2O$ and $NH_4^+$	D	$\rm NH_3$ and $\rm OH^-$

67.	Which acid below has the WEAKEST conjugate base?		
A	Hydrofluoric acid, HF(K <sub>a</sub> = 7.2 x 10 <sup>-4</sup> )	В	Formic acid, HCOOH(K <sub>a</sub> = 1.8 x 10 $^{-4}$ )
С	Hydrocyanic acid, HCN(K <sub>a</sub> = 6.2 x 10 <sup>–1</sup> º)	D	Acetic Acid, CH₃COOH(K <sub>a</sub> = 1.8 x 10 <sup>−5</sup> )
68.	If the solid ammonium nitrate is dissolved in water, wi	ll the re	sulting solution be acidic, basic or neutral?
Α	basic	В	neutral
С	acidic		
69.	A <sup>-</sup> is a weak base. Which equilibrium corresponds to th	ne equil	ibrium constant K <sub>a</sub> for HA?
Α	$HA_{(aq)} + H_2O_{(I)} \leftrightarrows H_2A^+_{(aq)} + OH^{(aq)}$	В	$A^{-}_{(aq)} + H_{3}O^{+}_{(aq)} \rightleftharpoons HA_{(aq)} + H_{2}O_{(I)}$
С	$HA_{(aq)} + H_2O_{(l)} \rightleftharpoons H_3O^+_{(aq)} + A^{(aq)}$	D	$A^{\text{-}}_{\text{(aq)}}+H_2O_{\text{(l)}}\leftrightarrows HA_{\text{(aq)}}+OH^{\text{-}}_{\text{(aq)}}$
Ε	$A^{-}_{(aq)} + OH^{-}_{(aq)} \rightleftharpoons HOA^{2-}_{(aq)}$		
70.	Acetic cid ( $HC_2H_3O_2$ ) is a weak monoprotic acid. Calcul acetic acid.	ate the	pH of a 0.20 M acetic acid solution. $K_a = 1.8 \times 10^{-5}$ for
A	2.72	В	11.28
С	None of the answers are correct	D	.698
71.	Is the salt NaNO $_3$ acidic, basic, or neutral?		
A	Neutral	В	Basic
С	Acidic		
72.	Is the salt $C_5H_5NHClO_4$ acidic, basic, or neutral?		
Α	Acidic	В	Neutral
С	Basic		
73.	Is the salt KOCl acidic, basic, or neutral?		
A	Basic	В	Acidic
С	Neutral		
74.	Rank the following in order of conjugate base strengthi. $H_2CO_3$ $K_a = 4.3 \times 10^{-7}$ ii. $NH_4^+$ $K_a = 5.6 \times 10^{-10}$ iii. HCNO $K_a = 3.5 \times 10^{-4}$	1.	
Α	CO <sub>3</sub> - <sup>2</sup> > NH <sub>3</sub> > CNO <sup>-</sup>	В	NH <sub>3</sub> > CO <sub>3</sub> <sup>-2</sup> > CNO <sup>-</sup>
С	CNO <sup>-</sup> > CO <sub>3</sub> <sup>-2</sup> > NH <sub>3</sub>	D	CNO <sup>-</sup> > NH <sub>3</sub> > CO <sub>3</sub> <sup>-2</sup>

75.	Which order lists the bases from the weakest to the (Hint: strong acids = weak conjugate bases)	e strongest	t?
Α	BrO <sup>-</sup> , BrO <sub>2</sub> <sup>-</sup> , BrO <sub>4</sub> <sup>-</sup> , BrO <sub>3</sub> <sup>-</sup> ,	В	BrO <sub>4</sub> <sup>-</sup> , BrO <sub>3</sub> <sup>-</sup> , BrO <sub>2</sub> <sup>-</sup> , BrO <sup>-</sup>
С	BrO <sub>4</sub> <sup>-</sup> , BrO <sub>3</sub> <sup>-</sup> , BrO <sup>-</sup> , BrO <sub>2</sub> <sup>-</sup>	D	BrO <sup>-</sup> , BrO <sub>2</sub> <sup>-</sup> , BrO <sub>3</sub> <sup>-</sup> , BrO <sub>4</sub> <sup>-</sup>

Answer Key			
1.d	2.b	3.d	4.c
5.c	6.b	7.c	8.a
9.a	10.c	11.a	12.a
13.c	14.c	15.a	16.a
17.c	18.c	19.d	20.d
21.c	22.d	23. (a) C, (b) G, (c) D, (c	d) F 24. (a) C, (b) D, (c) B, (d) G
25.d	26.d	27.a	28.d
29.d	30.d	31.c	32.d
33.c	34.d	35.d	36.c
37.b	38.	39.a	40.d
41.b	42.c	43.b	44.a
45.d	46.d	47.a	48.b
49.b	50.a	51.a	52.c
53.c	54.c	55.c	56.c
57.b	58.c	59.a	60.b
61.a	62.c	63.d	64.b
65.b	66.c	67.a	68.c
69.c	70.a	71.a	72.a
73.a	74.b	75.b	