Chem. G11-Q3W8-Quarter revision-Qs. Bank

Multiple Choice

Identify the choice that best completes the statement or answers the question.

1. One physical property of acids is a	
a. slippery feel c. sour taste	
b. pink color d. presence of hydrogen	
2. Acids react with carbonates to produce	
a. hydrogen c. a hydronium ion	
b. a base d. carbon dioxide	
3. The top industrial chemical produced in the United States for many years has	been .
a. sulfuric acid c. hydrochloric acid	
b. ammonia d. oxygen	
4. Oxides of nitrogen and sulfur are	
a. acids c. acidic anhydrides	
b. bases d. basic anhydrides	
5. The weak acid in the following list is	
a. hydrochloric acid c. nitric acid	
b. sulfuric acid d. acetic acid	
6. An acidic solution would have a pH of .	
a. less than 7 c. 7 or above	
b. more than 7 d. 7 or below	
7. Conductivity of an acid or a base in water is affected by all of the following e	except .
a. strength c. molarity	······
b. an indicator d. pH	
8. Acids produce in order to conduct electricity in water.	
a. H^+ c. H_3O^+	
b. H ₂ O d. OH ⁻	
9. The total number of possible different kinds of acid-base reactions is	
a. 1 c. 3	
b. 2 d. 4	
10. The reaction between an acid and a base always results in the formation of	
a. a salt c. a basic anhydride	
b. an acid anhydride d. a spectator ion	
11. The type of acid-base reaction that always goes to completion is the reaction	between .
a. a weak acid and a weak base c. a strong acid and a weak	base
b. a weak acid and a strong base d. a strong acid and a strong	g base
12. The best way to represent water in an ionic equation is as	-
a. $H^+ + OH^-$ c. $H_2O(1)$	
b. $H^+(aq) + OH^-(aq)$ d. $H_2O(aq)$	
13. The spectator ions in the reaction between HNO ₃ and NH ₄ OH are	
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 13. The spectator ions in the reaction between HNO₃ and NH₄OH are a. NH₄⁺ + NO₃⁻ b. H⁺ + OH⁻ c. NH₄⁺ + OH⁻ d. H⁺ + NO₃⁻ 14. According to the Bronsted-Lowry definition, an acid is a substance that a. releases H⁺ in solution c. accepts protons 	

 	15.	The effect of antacid on stomach fluids is to		
		a. make them neutral	c.	increase their pH
		b. make them basic	d.	decrease their pH
	16.	An oxidation reaction occurs only in the preser	ice o	f
		a. oxygen	c.	a metal
		b. hydrogen	d.	a reduction reaction
	17.	When an element is reduced, its oxidation num	ber	
		a. stays the same	c.	increases
		b. decreases	d.	may increase or decrease
	18.	The substance that is oxidized in the reaction F	e_2O_2	$_3 + 2Al \rightarrow Al_2O_3 + 2Fe$ is
		a. Fe_2O_3	c.	Al
		b. Al_2O_3	d.	Fe
	19.	A silver vase exposed to the air for a long time	is m	nost likely to have an outer coating of
		a. silver metal	c.	silver oxide
		b. silver sulfide	d.	hydrogen sulfide
	20.	An element or compound losing electrons to a	more	e electronegative element is
		a. oxidation	c.	redox
		b. reduction	d.	combination
	21.	For every oxidation reaction that occurs, a	re	eaction must also take place.
		a. combustion	c.	reduction
		b. decomposition	d.	synthesis
	22.	Reduction is a(n)		
		a. redox reaction	c.	half-reaction
		b. loss of electrons	d.	agent
	23.	In the equation $Al + Cl_2 \rightarrow AlCl_3$, the oxidation	n nui	mber of Al changes from to .
		a. 0, 3+	c.	0, 1-
		b. 3+, 0	d.	-1, 0
	24.	In the equation $Al + Cl_2 \rightarrow AlCl_3$, the oxidation	n nui	mber of Cl changes from to .
		a. 0, 3+	c.	0. 1-
		b. 3+, 0	d.	-1, 0
	25	When iron is obtained from iron ore according	to th	the equation $2\text{Fe}^{3+} + 3\Omega^{2-} + 3\text{C}\Omega \rightarrow 2\text{Fe} + 3\text{C}\Omega_2$ what is the
	20.	reducing agent?		
		a. Fe^{3+}	c.	O ²⁻
		b. Fe	d.	C^{2+}
	26.	Chemiluminescent reactions release		
		a. heat	c.	odors
		b. light	d.	gases
	27.	During respiration, what element is reduced?		-
		a. carbon	c.	oxygen
		b. hydrogen	d.	magnesium
	28.	Is the following reaction a redox reaction? H ₂ S	O₄ +	$-2NaOH \rightarrow Na_2SO_4 + 2H_2O$
		a. yes	с.	if energy is added
		b. no	d.	It is impossible to determine.
	29.	When silver reacts with sulfur to form tarnish.	wha	t element is the oxidizing agent?
		a. Ag	с.	S
		b. Ag^+	d.	S ²⁻
		-		

	30.	How do mammals keep from freezing during t	he w	vinter?
		a. hibernation	c.	oxidation of fats stored in the body
		b. chemiluminescence	d.	combustion
	31.	All of the following are biochemical redox pro	cess	es except .
		a. bioluminescence	c.	photosynthesis
		b. respiration	d.	corrosion
	32.	The part of the electrolytic cell at which electro	ons a	are produced is the
		a. anode	с.	external circuit
		b. cathode	d.	salt bridge
	33	A Downs cell can be used to prepare		
		a. hvdrogen gas	c.	chlorine gas
		b. oxygen gas	d.	sodium chloride
	34	An example of a cation is		
	51.	a Ch	с	Cl
		b. Na	d.	Na ⁺
	35	The purpose of adding cryolite (Na ₂ AlE ₂) in the	e nr	ocess of extracting aluminum from bauxite is to
	55.	a provide a source of fluorine	c pr	provide a source of aluminum
		b provide a source of fuorme	d.	lower the melting point of bauxite
	26	In a galvania call, the algotrode that is more as		ovidized is the
	50.	a anode	SILY	anion
		a. anode b. cathode	d.	cation
	27	A device used to measure the flow of evenent i	u.	
	37.	A device used to measure the flow of current in	nac	cell is the
		a. san onde	с. d	voltmeter
	20		u.	camoue
	38.	The properties of the makes a dry cell "	dry.'	' 1 / 1 /
		a. anode	C.	electrolyte
	•	b. cathode	d.	casing
	39.	One disadvantage of nickel-cadmium batteries	that	improved technology cannot overcome is the
		a. cost	с.	power limitations
		b. toxicity of cadmium	d.	size
	40.	The flow of electrons in a particular direction i	s ca	lled
		a. electrolysis	c.	oxidation
		b. an electrical current	d.	reduction
	41.	Using an electrical current to break molten bau	xite	, Al_2O_3 , into aluminum metal and a gas is an example of
		·		
		a. a cathode	c.	electrolysis
		b. an anode	d.	recycling
	42.	In the electrolysis of potassium bromide, brom	ine a	appears at the
		a. anode	c.	cathode
		b. anion	d.	cation
	43.	In the equation, $2K^+ + 2Cl^- \rightarrow 2K(l) + Cl_2(g)$,	what	t is the anion?
		a. Cl	c.	\mathbf{K}^+
		b. Cl_2	d.	K
	44.	In the equation, $2K^+ + 2Cl^- \rightarrow 2K(l) + Cl_2(g)$,	what	t is the cation?
-		a. Cl	c.	K ⁺
		b. Cl_2	d.	K

45	In the equation $2K^+ + 2C\Gamma \rightarrow 2K(1) + Cl_2(9)$ what i	is oxidized?
 10.	a. Cl^{-} c.	K ⁺
	b. Cl ₂ d.	K
46.	In the equation, $2\mathbf{K}^+ + 2\mathbf{Cl}^- \rightarrow 2\mathbf{K}(\mathbf{l}) + \mathbf{Cl}_2(g)$, what i	is produced at the anode?
 	a. Cl ⁻ c.	K ⁺
	b. Cl_2 d.	K
47.	In the equation, $2K^+ + 2Cl^- \rightarrow 2K(l) + Cl_2(g)$, what i	is produced at the cathode?
 .,.	a. Cl^{-} c.	K ⁺
	b. Cl_2 d.	K
48.	In electrolysis, which reaction—oxidation or reduction	ion—occurs at a faster rate?
 	a. oxidation c.	They occur at the same rate.
	b. reduction d.	It depends on the reaction.
49.	Assume an object is to be plated with copper. In the	electroplating process, the anode is made of
	a. an electrolyte c.	copper
	b. carbon d.	the object itself
50.	. When two halves of a spontaneous redox reaction ar	re separated and made to transfer electrons through a wire,
	a(n) is formed.	
	a. anode c.	cathode
	b. battery d.	half-cell
 51.	. The size of an electrical current depends on p	ootential difference.
	a. the direction of the c.	the source of the
	b. the size of the d.	whether there is a
 52.	. Aluminum is more easily oxidized than tin. In an alu	uminum-tin galvanic cell, electrons flow from the
	electrode to the electrode.	2.
	a. Al, Sn c.	AI^{3+} , AI
	b. Sn, Al d.	Sn ²⁺ , Sn
 53.	. When a lead storage battery operates, is oxidi	ized.
	a. Pb c.	Pb ⁺⁺
	b. Pb ⁻ d.	H_2SO_4
 54.	. One type of experimental battery for electric cars us	es the active metal
	a. lithium C.	rubidium
	d.	
 55.	A strip of magnesium is placed in a silver nitrate sol	lution, and a strip of silver is placed in a solution of
	silver in magnesium chloride	Both will react
	b magnesium in silver nitrate d	Neither will react
56	Isomore have	Tettier will fedet.
 50.	a the same chemical and physical properties	
	b the same chemical properties but different physical	ical properties
	c. different chemical properties, but the same phys	ical properties
	d. different chemical and physical properties	
57.	The six extra electrons in a benzene molecule are	
 	a. arranged in double bonds	
	b. arranged in alternate single and double bonds	
	c. shared equally by all six carbon atoms	
	d. shared equally by all six hydrogen atoms	

58. Fractional distillation of petroleum works because the components all have different _____.

- a. boiling points c. chemical properties
 - b. melting points d. molecular structures
- 59. A process that typically yields alcohols is _____.
 a. distillation c. polymerization
 b. fermentation d. cracking
 60. A monomer can take part in an addition reaction if it contains _____.
 - a. glucoseb. two functional groupsc. a double or triple bondd. a pair of single bonds
- Yes/No

Indicate whether you agree with the statement.

- $_$ 61. NH₄CN + HCl could be combined to form a buffer solution.
- 62. $KC_2H_3O_2 + HC_2H_3O_2$ could be combined to form a buffer solution.
- $_$ 63. HNO₃ + KNO₃ could be combined to form a buffer solution.
- _____ 64. HCN + KOH could be combined to form a buffer solution.
- _____ 65. $NH_4OH + NH_4Cl$ could be combined to form a buffer solution.

Completion

Complete each statement.

- 66. ______ is the amount of heat needed to raise 1 g of a substance 1°C.
- 67. A solution that contains all of a solute that can dissolve in the solvent at a given temperature is a(n)
- 68. The force needed to overcome the attraction among molecules at the surface of a liquid is called
- 69. ______ occurs when hydrogen atoms on one molecule are attracted to atoms of high electronegativity on another molecule.
- 70. ______ is the flow of molecules through a selectively permeable membrane.
- 71. The heat gained or lost when a solute is dissolved in a solute is called the ______.
- 72. The light-scattering effect observed when light shines through a colloid is called the ______
- 73. A base that dissociates completely in water solution is known as a(n) ______
- 74. A(n) ______ is an acid that dissociates completely in water solution.
- 75. The combination of a water molecule and a hydrogen ion is a(n) ______.

Consider this equation for the following questions: $K^{+}(aq) + OH^{-}(aq) + H^{+}(aq) + Br^{-}(aq) \rightarrow H_{2}O(l) + K^{+}(aq) + Br^{-}(aq).$

76. In order to conduct a titration reaction, you would have to begin with a(n) ______ of either the acid or base.

- 77. If you wanted to adjust the solution in a titration so that the pH changes very slowly, you could add a(n) ______ to the reaction mixture.
- 78. In the equation $2C_2H_6(g) + 7O_2(g) \rightarrow 4CO_2(g) + 6H_2O(g)$, the oxidation number of oxygen has gone from 0 to 2-, so it has undergone ______.

atom or molecule

- 79. A substance that gains electrons in a chemical reaction is known as a(n) ______.
- 80. Hydrogen gas is used for some industrial operations because of its tendency to give up electrons, bringing about the chemical reaction known as ______ in some other substance.

Matching

	Match each item with the correct statement l	below.	
	a. true solutions	c.	both
	b. colloids	d.	neither
 81. 82.	particle size: clumps typically 10-100 times heterogeneous mixture	larger	than a typical

Match each item with the correct item below.

a.	reducing agent	f.	rust
b.	$Ag^0 \rightarrow Ag^+ + e^-$	g.	oxidation number $= 0$
c.	a common oxidizing agent	h.	reduction
d.	oxidation	i.	2-
e.	$\mathrm{Fe}^{3+} + 3e^{-} \rightarrow \mathrm{Fe}^{0}$	j.	redox reaction

- _____ 83. Fe₂O₃
- _____ 84. combustion
- _____ 85. oxide ion

Match each item with the correct item below.

- a. oxidizing agent
- b. reducing agent
- c. both
- _____ 86. O₂²⁻
- _____ 87. F₂
- _____ 88. K⁺
- 89. Cl⁻
- ____ 90. CO
- ____ 91. Na
- $---- 92. Fe^{3+}$

Match each item with the correct statement below.

a.	anion	t.	electrolysis
b.	anode	g.	electrolytic cell
c.	cathode	h.	galvanic cell
d.	cation	i.	potential difference
e.	electrical current	j.	voltage

93. In an electrochemical cell, electrons travel from the _____, a region of high negative potential.

94. If there is no _____ between electrodes, electric current will not flow.

_ 95. An ion with a negative charge is called a(n) _____.

Problem

A group of students made a number of solutions of known concentration for the class stockroom. Unfortunately, they neglected to record all the information regarding the way in which the solutions were made. From the information provided in the chart below, determine the ten missing values indicated by the question marks.

Solute formula	Solute mass	Solution volume	Molarity
КОН	7.8 g	500 mL	?
LiCl	?	4.00 L	0.125M
CaCl ₂	9.0 g	250 mL	?
$Al_2(SO_4)_3$	12.3 g	?	0.900M
K ₃ PO ₄	?	250 mL	0.324 <i>M</i>
KClO ₃	122.5 g	?	1.0 <i>M</i>
NH ₄ Br	?	2.0 L	0.50M
HNO ₃	20.0 g	500 mL	?
HCl	?	750 mL	0.044M
$(NH_4)_2SO_4$	44.2 g	600 mL	?

96. _____ KClO₃ solution volume

The table shows the data collected in a series of five titration experiments between samples of nitric acid and sodium hydroxide. From the information in the table, determine the missing values.

Experiment	A	cid	Base		
	molarity	volume	molarity	volume	
101	0.10 <i>M</i>	40.0 mL	0.20 <i>M</i>	a	
102	b	50.0 mL	0.14 <i>M</i>	70.0 mL	
103	0.40 <i>M</i>	30.0 mL	c	25.0 mL	
104	0.010M	d	0.0077 <i>M</i>	65.0 mL	
105	2.0M	16.0 mL	e	25.0 mL	

97. e. _____

A chemist is studying several unknown compounds. For each one, she has narrowed down the final identification to one of the two choices shown. Use the additional data shown in parentheses to make the correct choice for each.

- 98. methane or octane (Has structural isomers.)
- 99. propane or propyl alcohol (Is insoluble in water.)
- 100. Distinguish between a carboxylic acid and an ester.

Chem. G11-Q3W8-Quarter revision-Qs. Bank Answer Section

MULTIPLE CHOICE

1.	ANS:	С	PTS:	1	DIF:	В	OBJ:	14-1
2.	ANS:	D	PTS:	1	DIF:	В	OBJ:	14-2
3.	ANS:	А	PTS:	1	DIF:	В	OBJ:	14-1
4.	ANS:	С	PTS:	1	DIF:	В	OBJ:	14-1
5.	ANS:	D	PTS:	1	DIF:	В	OBJ:	14-6
6.	ANS:	А	PTS:	1	DIF:	В	OBJ:	14-7
7.	ANS:	В	PTS:	1	DIF:	В	OBJ:	14-4
8.	ANS:	С	PTS:	1	DIF:	В	OBJ:	14-4
9.	ANS:	D	PTS:	1	DIF:	В	OBJ:	15-3
10.	ANS:	А	PTS:	1	DIF:	В	OBJ:	15-3
11.	ANS:	D	PTS:	1	DIF:	В	OBJ:	15-3
12.	ANS:	С	PTS:	1	DIF:	В	OBJ:	15-1
13.	ANS:	А	PTS:	1	DIF:	В	OBJ:	15-1
14.	ANS:	D	PTS:	1	DIF:	В	OBJ:	15-2
15.	ANS:	С	PTS:	1	DIF:	В	OBJ:	15-3
16.	ANS:	D	PTS:	1	DIF:	В	OBJ:	16-1
17.	ANS:	В	PTS:	1	DIF:	В	OBJ:	16-1
18.	ANS:	А	PTS:	1	DIF:	В	OBJ:	16-1
19.	ANS:	В	PTS:	1	DIF:	В	OBJ:	16-5
20.	ANS:	А	PTS:	1	DIF:	В	OBJ:	16-2
21.	ANS:	С	PTS:	1	DIF:	В	OBJ:	16-1
22.	ANS:	С	PTS:	1	DIF:	В	OBJ:	16-2
23.	ANS:	А	PTS:	1	DIF:	В	OBJ:	16-1
24.	ANS:	С	PTS:	1	DIF:	В	OBJ:	16-1
25.	ANS:	D	PTS:	1	DIF:	А	OBJ:	16-4
26.	ANS:	В	PTS:	1	DIF:	В	OBJ:	16-1
27.	ANS:	С	PTS:	1	DIF:	В	OBJ:	16-6
28.	ANS:	В	PTS:	1	DIF:	В	OBJ:	16-2
29.	ANS:	С	PTS:	1	DIF:	А	OBJ:	16-4
30.	ANS:	С	PTS:	1	DIF:	А	OBJ:	16-6
31.	ANS:	D	PTS:	1	DIF:	В	OBJ:	16-6
32.	ANS:	А	PTS:	1	DIF:	В	OBJ:	17-5
33.	ANS:	С	PTS:	1	DIF:	В	OBJ:	17-3
34.	ANS:	D	PTS:	1	DIF:	В	OBJ:	17-1
35.	ANS:	D	PTS:	1	DIF:	В	OBJ:	17-2
36.	ANS:	А	PTS:	1	DIF:	В	OBJ:	17-6
37.	ANS:	С	PTS:	1	DIF:	В	OBJ:	17-4
38.	ANS:	С	PTS:	1	DIF:	В	OBJ:	17-4
39.	ANS:	В	PTS:	1	DIF:	В	OBJ:	17-3
40.	ANS:	В	PTS:	1	DIF:	В	OBJ:	17-2

41.	ANS:	С	PTS:	1	DIF:	В	OBJ:	17-3
42.	ANS:	А	PTS:	1	DIF:	В	OBJ:	17-3
43.	ANS:	А	PTS:	1	DIF:	В	OBJ:	17-2
44.	ANS:	С	PTS:	1	DIF:	В	OBJ:	17-2
45.	ANS:	А	PTS:	1	DIF:	В	OBJ:	17-2
46.	ANS:	В	PTS:	1	DIF:	А	OBJ:	17-2
47.	ANS:	D	PTS:	1	DIF:	А	OBJ:	17-2
48.	ANS:	С	PTS:	1	DIF:	В	OBJ:	17-1
49.	ANS:	С	PTS:	1	DIF:	В	OBJ:	17-3
50.	ANS:	В	PTS:	1	DIF:	В	OBJ:	17-4
51.	ANS:	В	PTS:	1	DIF:	В	OBJ:	17-5
52.	ANS:	А	PTS:	1	DIF:	А	OBJ:	17-6
53.	ANS:	А	PTS:	1	DIF:	В	OBJ:	17-6
54.	ANS:	А	PTS:	1	DIF:	В	OBJ:	17-4
55.	ANS:	В	PTS:	1	DIF:	А	OBJ:	17-2
56.	ANS:	D	PTS:	1	DIF:	В	OBJ:	18-2
57.	ANS:	С	PTS:	1	DIF:	В	OBJ:	18-4
58.	ANS:	А	PTS:	1	DIF:	В	OBJ:	18-3
59.	ANS:	В	PTS:	1	DIF:	В	OBJ:	18-5
60.	ANS:	С	PTS:	1	DIF:	В	OBJ:	18-7

YES/NO

61.	ANS:	Ν	PTS:	1	DIF:	В	OBJ:	15-4
62.	ANS:	Y	PTS:	1	DIF:	В	OBJ:	15-4
63.	ANS:	Ν	PTS:	1	DIF:	В	OBJ:	15-4
64.	ANS:	Ν	PTS:	1	DIF:	В	OBJ:	15-4
65.	ANS:	Y	PTS:	1	DIF:	В	OBJ:	15-4

COMPLETION

66. ANS: Specific heat

	PTS:	1	DIF:	В	OBJ:	13-3
67.	ANS:	saturated soluti	ion			
	PTS:	1	DIF:	В	OBJ:	13-4
68.	ANS:	surface tension	l			
	PTS:	1	DIF:	В	OBJ:	13-3
69.	ANS:	Hydrogen bond	ling			
	PTS:	1	DIF:	В	OBJ:	13-2
70.	ANS:	Osmosis				
	PTS:	1	DIF:	В	OBJ:	13-6
71.	ANS:	heat of solution	1			

72.	PTS: ANS:	1 Tyndall effect	DIF:	В	OBJ:	13-3		
72	PTS:	1 strong boos	DIF:	В	OBJ:	13-5		
73.	ANS: PTS:	1	DIF:	В	OBJ:	14-5		
74.	ANS:	strong acid		_				
75.	PTS: ANS:	1 hydronium ion	DIF:	В	OBJ:	14-5		
74	PTS:	1	DIF:	В	OBJ:	14-3		
/6.	ANS:	standard soluti	on					
77.	PTS: ANS:	1 buffer	DIF:	В	OBJ:	15-5		
79	PTS:	1 roduction	DIF:	В	OBJ:	15-4		
70.	ANS.	1	DIE.	D	ODI.	16.2		
79.	ANS:	oxidizing agen	DII [.] .	D	ODJ.	10-2		
80	PTS:	1 reduction	DIF:	В	OBJ:	16-4		
00.	PTS:	1	DIF:	В	OBJ:	16-4		
						-		
MATCHIN	NG							
81.	ANS:	В	PTS:	1	DIF:	В	OBJ:	13-5
82.	ANS:	D	PTS:	1	DIF:	В	OBJ:	13-5
83.	ANS:	F	PTS:	1	DIF:	В	OBJ:	16-3
84.	ANS:	J	PTS:	1	DIF:	В	OBJ:	16-1
85.	ANS:	Ι	PTS:	1	DIF:	В	OBJ:	16-3
86.	ANS:	С	PTS:	1	DIF:	В	OBJ:	16-4
87.	ANS:	А	PTS:	1	DIF:	В	OBJ:	16-4
88.	ANS:	А	PTS:	1	DIF:	В	OBJ:	16-4
89.	ANS:	В	PTS:	1	DIF:	В	OBJ:	16-4
90.	ANS:	С	PTS:	1	DIF:	В	OBJ:	16-4
91.	ANS:	В	PTS:	1	DIF:	В	OBJ:	16-4
92.	ANS:	А	PTS:	1	DIF:	В	OBJ:	16-4
93.	ANS:	В	PTS:	1	DIF:	В	OBJ:	17-5

94.	ANS: I	PTS:	1	DIF:	В	OBJ:	17-5
95.	ANS: A	PTS:	1	DIF:	В	OBJ:	17-1

PROBLEM

96.	ANS: 1.0 L				
97.	PTS: 1 ANS: 1.3M	DIF:	А	OBJ:	13-4
98.	PTS: 1 ANS: octane	DIF:	В	OBJ:	15-5
99.	PTS: 1 ANS: propane	DIF:	В	OBJ:	18-2
	PTS: 1	DIF:	В	OBJ:	18-5

100. ANS:

See Solution 18-2. In an ester, the H atom in a carboxylic acid is replaced by R', a hydrocarbon group.

