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JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY Dept of Chemical Sciences, 1st Exam, Analytical Chemistry Chem. 233, October 18, 2012

	:الشعبة: التسلسل:							سم:الدقم الجامعي: الدكتور:					الاسم:				
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16											<u>16</u>					
 Which of the following statements is not correct regarding activity coefficient? A. It approaches unity for very dilute solution (μ=0) B. Activity coefficient of Na⁺ increases as ionic strength of solution decreases. C. For a solution of μ=0.01, activity coefficient of Ca²⁺ is larger than Na⁺. D. It equals unity for neutral species. 2. The ionic strength of 0.05 M MgCl₂ is: 																	
 A) μ=0.05 M B) μ=0.10 M C) μ=0.15 M D) μ=0.30 M 3. Considering correct significant figures, the pH of 0.025 M HCl is, and [H⁺] for a solution having pH= 5.50 is 																	
A. 1.60 , 3.2×10^{-6} B) 2.60 , 3.2×10^{-7} C) 1.6 , 3.16×10^{-6} D) 1.06 , 0.74 4. In an aqueous solution containing $CrO_4^{2^-}$, Br^- and Cl^- . The precipitation order with gradual addition of Ag^+ is: $(K_{sp}(AgBr)=5.0 \times 10^{-13}; K_{sp}(Ag_2CrO_4)=1.2 \times 10^{-12} \& K_{sp}(AgCl)=1.8 \times 10^{-10})$																	
A) AgCl, Ag ₂ C) AgBr, AgC													en A n Ag				
 5. Which of the following statements is correct? A) Precision is the degree of agreement between measured value & true value B) F- test examines agreement between two standard deviations. C) Confidence limits & t- test assumed that only systematic error is present D) ppm = ng/g 																	
6. How many of 0.10 M	_			vt %	NaC)H (4	40g/ı	nol)	are 1	equi	red t	o pro	epare	500	mL	of s	olution
A) 4.0 g]	B) 40).0 g			C	C) 2.3	85 g					D) 4	.70 g	5
7. How many containin Ba ²⁺ + S	ng 0.	142 រូ	g Na	$_{2}SO_{4}$	(142									e In a	ı solı	ıtion	l
A) 11.0 mL	~ 4				0.0 n	nL			C) 1	2.0 n	nL			D) 1	3.0 r	nL	

8. The width of confid	lence interval increase	es, if standard deviation	on and confidence level
A) Increases, increase C) Increases, decrease			
A) Two setsB) It is not nC) Tabulated	of replicates are obtain ecessary that N1 equations of the control	N1+N2-2 degrees of fro	methods.
			aCl and 0.05 mol of Na ₂ SO ₄ .
	rity of Na ⁺ in this solution () 0.30 M		D) 0.60 M
3.23. If the replicand standard dev	eate 3.45 is questional iation of these replica		
MnO_4 , according to $5H_2C_2O_4 + 2$	following equation. V2MnO ₄ + 6H ⁺ \rightarrow 2M	wired to completely really what is the molarity of $In^{+2} + 8H_2O + 10 CC$ C) $3.12 \times 10^{-3} M$?MnO ₄ solution?
13. How many mgs of ppm K ⁺ (39.1 g/s		ol) are required to pre	pare 250 mL solution of 100
		C) 55.69 mg	D) 5.73 mg
14. Consider the followard HA \leftrightarrow H ⁺ + A ⁻ KA ⁻ + H ₂ O \leftrightarrow HA	K2= 1.8 x 10 ⁻⁵ . Calcula	instants: $H_2O \leftrightarrow H^+ + 0$ ate the equilibrium con	OH ⁻ K1= 1.0×10^{-14} and instant (K) for the reaction:
A) 5.56×10^{-20}	B) 1.8 x 10 ⁻⁵	C) 1.0×10^{-14}	D) 5.56 x 10 ⁻¹⁰
15. What is the solubi A) 0.0162 M	lity of PbCl ₂ in satura B) 0.0075 M	ted solution of H ₂ O ? C) 0.0041 M	$(k_{sp}=1.7 \times 10^{-5})$ D) 0.0013 M
	was found to contain B) 5.3 x 10 ⁻² pp		oncentration of Hg in ppb is: D) 530 ppb

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 Which of the following statements is not correct regarding activity coefficient? A. It approaches unity for very dilute solution (μ=0) B. Activity coefficient of Na⁺ increases as ionic strength of solution increases. C. For a solution of μ=0.01, activity coefficient of Ca²⁺ is smaller than Na⁺. D. It equals unity for neutral species. 																	
2. The ionic strength of 0.10 M MgCl ₂ is: A) μ =0.05 M B) μ =0.10 M C) μ =0.15 M D) μ =0.30 M																	
 3. Considering correct significant figures, the pH of 0.0025 M HCl is, and [H⁺] for a solution having pH= 6.50 is A. 1.60, 3.2 x 10⁻⁶ B) 2.60, 3.2 x 10⁻⁷ C) 1.6, 3.16 x 10⁻⁶ D) 1.06, 0.74 																	
4. In an aqueo addition (AgCl)=	of A	g ⁺ is	: (K	ontai _{sp} (A	ning gBr)	CrO = 5.0	04 ²⁻ ,]	Br ai .0 ⁻¹³	nd C ; K _{sp}	l . T	he pı 2CrC	recip 0 ₄) =	itatio	on or X 10	rder v ⁻¹² &	with K _{sp}	gradual
A) AgCl, Ag ₂ C) AgBr, Ag ₂	CrO	the	n Ág					,	_	_			.g ₂ Cı AgC				
 5. Which of the following statements is correct? A) Accuracy is the degree of agreement between measured value & true value B) F- test examines agreement between two means. C) Confidence limits & t- test assumed that only systematic error is present D) ppm = ng/g 																	
6. How many grams of 85 wt % NaOH (40g/mol) are required to prepare 500 mL of solution of 0.20 M NaOH?																	
A) 4.0 g]	B) 40).0 g			C	2) 2.3	35 g					D) 4	.70 g	7
7. How many containing Ba ²⁺ + So	ng 0.	142 ք	g Na	$_2SO_4$	(142									e In a	a solu	ution	l
A) 11.0 mL	J 4	, L			0.0 r	nL			C) 1	2.0 n	nL			D) 1	3.0 r	nL	

8. The width of confidence level	ce interval decre	ases, if	standard deviat	ion	and confidence					
A) Increases, increases C) Increases, decreases	B) Decreases,D) Decreases,									
9. Which statement is not A) Two sets of a B) It is not nece C) Tabulated "t' D) The true value.	replicates are obsessary that N1 eq "is calculated at	tained b uals N2 N1+N2	y two different	method	s.					
10. A 500 mL solution w What is the molarity				NaCl and	d 0.10 mol of Na ₂ SO ₄ .					
•	30 M	C) 0.45		D) 0.60	D) 0.60 M					
and standard deviati A. 3.298, 0.092 B. 3.2 12. If 42.68 mg of H ₂ C ₂ C MnO ₄ , according to follow	3.40 is question on of these replication of the service (260, 0.041) 0 ₄ (90g/mol) is re- lowing equation.	cates are C. 3.28 equired t	ter applying Q- e: (Q(table)= 0.38, 0.072 to completely r s the molarity of	test or C .630 , Go D. 3.24 eact with	Grubs test, the average (table)= 1.60) 40, 0.082 h 16.3 mL of					
$5H_2C_2O_4 + 2Mr$ A) $5.82 \times 10^{-3} M$	B) $3.82 \times 10^{-3} \text{ M}$	ZMIN + / I	$^{8}\text{H}_{2}\text{O} + ^{10}\text{C}$ C) 3.12×10^{-3}	M	D) 0.0116 M					
13. How many mgs of K ppm K ⁺ (39.1 g/mol		nol) are	required to pr	epare 50	00 mL solution of 100					
A) 111.38 mg			C) 55.69 mg		D) 5.73 mg					
14. Consider the following equilibrium constants: $H_2O \leftrightarrow H^+ + OH^- K1 = 1.0 \times 10^{-14}$ and $A^- + H_2O \leftrightarrow HA + OH^- K2 = 5.56 \times 10^{-10}$. Calculate the equilibrium constant (K) for the reaction: $HA \leftrightarrow H^+ + A^-$										
A) 5.56 x 10 ⁻²⁰	B) 1.8 x 10 ⁻⁵		C) 1.0 x 10 ⁻¹⁴		D) 5.56 x 10 ⁻¹⁰					
15. What is the solubility A) 0.0162 M	of PbCl ₂ in satu B) 0.0075 M	rated so	lution of H ₂ O (C) 0.0041 M	? (k _{sp} = 1	.7 x 10 ⁻⁶) D) 0.0013 M					
16. A 100 mg sample was A) 5.3 x 10 ⁻⁵ ppb	s found to contain B) 5.3 x 10 ⁻² p		μg Hg. The co C) 53 ppb		tion of Hg in ppb is: D) 530 ppb					

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 Which of the A. It approach Activity con C. For a solution D. It equals under the A. It approach 	effiction o	nity ient of µ=	for v of N 0.01	ery of a ting , acti	dilute icrea ivity	e sol ses a coef	utior is ior	n (μ= nic st	0) reng	th of	solu	ıtion	decı	ease		?
2. The ionic st A) μ=0.0	_	•			_	_		M		D) μ=	0.30	М			
3. Considerin solution 1 A. 1.60, 3.2 x																$[H^{+}]$
4. In an aqueo addition (AgCl)=1	of A	g ⁺ is (10	: (K 10)	sp (A	gBr)	= 5.0	0 X 1	10 ⁻¹³	; K _{sp}	(Ag	₂ CrC) ₄) =	1.2	X 10		
A) AgCl, Ag ₂ (C) AgBr, Ag ₂ (_							, Ago 4, Ag						
5. Which of the A) Precision is B) F- test example C) Confidence D) ppm = ng/	s the mine e lim	deg s agı	ree o	of ago	reem oetwo	ent l	oetwo wo s	een r tand	ard c	levia	tions	S.			e	
6. How many of 0.10 M	_			wt %	NaC	OH (40g/1	mol)	are 1	requi	red t	to pr	epare	e 500) mL	of so
A) 4.0 g				B) 40).0 g			C	C) 2.3	35 g					D) 4	.70 g
7. How many containin Ba ²⁺ + So	ıg 0.	142 ք	g Na	$_2$ SO $_4$	(14)									e In a	a solı	ution

C) 12.0 mL

B) 10.0 mL

D) 13.0 mL

A) 11.0 mL

8. The width of confidence level	e interval decrease	s, if standard deviat	ion and confic	lence			
	B) Decreases, de	creases					
C) Increases, decreases	D) Decreases, inc						
B) It is not neces	eplicates are obtain sary that N1 equal is calculated at N1	ned by two different	methods.				
10. A 500 mL solution wa What is the molarity			NaCl and 0.05 mol o	f Na ₂ SO ₄ .			
<u> </u>) 0.45 M	D) 0.60 M				
11. Consider the following 3.23. If the replicate and standard deviation A. 3.298, 0.092 B. 3.2	3.40 is questionable on of these replicate	e; after applying Q- es are: (Q(table)= 0.	test or Grubs test, th .630 , G(table)= 1.60	e average			
12. If 42.68 mg of $H_2C_2O_4$ MnO ₄ , according to follo $5H_2C_2O_4 + 2MnO_4$ A) $5.82 \times 10^{-3} M$	owing equation. W $O_4^- + 6H^+ \rightarrow 2M_1$	That is the molarity of $n^{+2} + 8H_2O + 10 C$	of MnO ₄ solution?				
13. How many mgs of K ppm K ⁺ (39.1 g/mol)) are required to pr	epare 250 mL solut	ion of 100			
		C) 55.69 mg	D) 5.73 mg				
14. Consider the followin $HA \leftrightarrow H^+ + A^- K2 =$ $A^- + H_2O \leftrightarrow HA + O$	1.8 x 10 ⁻⁵ . Calculat						
A) 5.56 x 10 ⁻²⁰	B) 1.8 x 10 ⁻⁵	C) 1.0×10^{-14}	D) 5.56 x 10	J ⁻¹⁰			
15. What is the solubility			$? (k_{sp} = 1.7 \times 10^{-6})$				
A) 0.0162 M	B) 0.0075 M	C) 0.0041 M	D) 0.0013 N	Л			
16. A 100 mg sample was A) 5.3 x 10 ⁻⁵ ppb	found to contain 0 B) 5.3 x 10 ⁻² ppb		oncentration of Hg in D) 530 ppb	ppb is:			