

PHILADELPHIA UNIVERSITY

Final Exam

Faculty: Science

General Chemistry

Date: 06-02-2023

Time: 120 min

Name	(الاسم):
Sectior	الشعبة) ٦ (الشعبة)

/30 marks

Student No. (الرقم الجامعي):..... Instructor 1 Name (اسم المدرس):.....

<u>Q1)</u>

R = 0.0821 L.atm / r	nol.K				
T(°C) = [T(°F) – 32] x 5/9	T(°F) = (9/5)	(°F) + 32		T(K) = T(°C) + 273.15	
1atm = 760 mmHg = 760 torr	pH = - log [H ₃ O ⁺]		Avogadro's I	No = 6.022×10^{23}	

1 H Hydrogen 1.01																	2 He Helium 4.00
3 Li Lithium 6.94	4 Be Beryllium 9.01											5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18
11 Na Sodium 22.99	12 Mg Magnesium 24.31											13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 lodine 126.90	54 Xe Xenon 131.29
55 Cs Cesium 132.91	56 Ba Barium 137.33	57 La Lanthanum 138.91	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 TI Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)									
				58	59	60	61	62	63	64	65	66	67	68	69	70	71
				Cerium 140.12	Praseodymium 140.91	Neodymium 144.24	Promethium (145)	Samarium 150.36	Eu Europium 151.96	Gadolinium 157.25	Terbium 158.93	Dysprosium 162.50	Holmium 164.93	Erbium 167.26	Tm Thulium 168.93	Yb Ytterbium 173.04	Lutetium 174.97
				Th	Pa	U U	Np	Pu	Am	Cm	Bk	Oct	Es Es	Fm	Md	No	Lr

Question 2: /3 Pts

7.50 g CO₂ gas occupies 7.60 liters at 989 torr. Calculate the temperature of gas in ⁰C?

Question 3: /3 Pts

If the pH of a solution is 3.30, what are the molar concentrations of $H^+(aq)$, $OH^-(aq)$, and pOH in the solution?

Question 4: /3 Pts

 CH_4 reacts with Cl_2 to produce CCl_4 + HCl as following reaction

$CH_4 + Cl_2 \rightarrow CCl_4 + HCl$

A mixture of 92.29 g of CH₄ and 117.5 of Cl₂ is allowed to react. Calculate amount of CCl₄:

Q1) Choose the most accurate answer from the questions below and select the correct choice in the box:

1. Which of this is the electr	on configuration of C	a in CaCl ₂ compo	ound?	
A) 1S ² 2S ² 2P ⁶ 3S ¹	B) 1S ² 2S ² 2P ⁶ C) 1S ² 2S ² 2P ⁵ 3S ²	D) 1S ² 2S ² 2P ⁶ 3S ² 3P ⁶	
2. Perform the following c (145.7 g/mL)(3.00 mL) =	alculations and rou	nd off the answ	vers to the proper sigr	nificant figures.
A. 437.1 g	B. 386.3 g	<u>(</u>	<u>C.</u> 437 g	D. 386.34 g
3. The mass of KBr needed <u>A.</u> 42.4 g	l to prepare 250 ml B. 51.0 g	of a 0.707 <i>M</i>	KBr solution. C. 7.50 g	D. 30.0 g
4. Which of the following	element is paramag	gnetic		
A. He	B. Ca	<u>C</u> . Cs		D. Be
5. The oxidation number of A. 0 <u>B.</u> +	of Fe in Fe₂O ₃ ∙3	C3		D. +2
6. The amount of ethanol	C_2H_5OH (in grams),	, is required to	prepare a solution 85	5.0 mL of 0.453 M C_2H_5OH
is: <u>A.</u> 1.77	B. 1.77 x 10 ⁻²	(C. 3.85	D. 3.85 x 10 ⁻²
7. Forty centimeters is equ <u>A.</u> 4.00 x 10 ⁸ nm	ual to how many na B. 4.00 x 10 ⁻¹⁰ nr	nometers? n (C. 4.00 x 10 ¹² nm	D. 4.00 x 10 ⁻¹⁵ nm
8. Triphenylphosphine me A. 76.4 ^o F	lts at 80 ⁰ C. The me B. 62.2 ⁰ F	lting point in d (egrees Fahrenheit is: <u>C.</u> 176 ^o F	D. 201 ⁰ F
9. For the following reaction $K_2CO_{3(aq)} + H_2S$	on, the spectator io $SO_{4(aq)} \rightarrow K_2SO_4 + H_2$	ns are: 2CO3		
A. $2H^+$ and SO_4^{2-} C. $2K^+$ and CO_3^{2-}		<u>B.</u> 2K⁺ ai D. 2H⁺ a	nd SO4 ²⁻ nd CO3 ²⁻	
10. Which of the following A. I ₂ O ₅ , iodine pentoxide <u>C.</u> PbI ₂ , lead(I) iodide	g name is correct fo	r given chemic B. LiNO₃ D. H₂SO₄, hydrc	al formula? a, lithium nitrate osulfuric acid	
11. Which of the following A. The pressure of a fixed B. The relationship betwee C. The volume of a gas is in <u>D.</u> Both A and B.	statement is corre amount of gas is dir en pressure (P) vers nversely proportion	ct? rectly proportic sus 1/volume (2 ral to the numb	onal to the moles of th 1/V) is directly proport per of moles of the gas	ne gas. tional. 5 present.
12. The density of a gased and Mwt of H = 1.01 g/mc	ous organic compou I). The compound is B. Calle	und is 3.38 g/L s:	at 40°C and 1.97 atm	n (Mwt of C = 12.01 g/mol
/ C41110	0. 02116	<u>-</u>	<u>-</u>	D. C4118

13. The volume (L) occupied A. 4.752 x 10 ⁴	by 63.62 g of nitric oxi <u>B.</u> 47.52	de (NO) a (at STP C. 1.41	(0C and 760mmHg) is 0 x 10 ³	s: D. 1.410
14. Which of the following g	as has higher density a	t STP con	dition	?	
A. CH ₄	<u>B.</u> Cl ₂	(C. CO ₂		D. O ₂
15. Which of the following is temperature and a	<i>not</i> a statement of Bo	yle's law	? All st	atements assume con	stant
A. $P = constant/V$	B. V α 1/P	<u>(</u>	<u>C.</u> P/V	= constant	D. PV = constant
16. Calculate the pH of a s	olution if it's $[OH^-] = 0$	0.000700	M an	d indicate whether th	e solution is acidic,
A. 3.15, acidic	B. 17.2, basic	<u>(</u>	<u>C</u> . 10.8	, basic	D. 11, basic
17. Which one of the conjug	ate bases of the follow	ving Brøns	sted-Lo	owry acids is incorrect	$?$ D NH ₂ for NH $^+$
	D. 113 101 1125	<u> </u>	<u>. 112</u> 50	04 101 11304	D. 11131011114
18. The value of L for d orbitA. 0B. 1	al is	<u>C.2</u>			D. 3
19. Which of the following a A. HCN	cids consider as a stror <u>B.</u> HClO4	ng acid? (C. HF		D. HNO ₂
20. H ₃ PO ₄ is					
<u>A.</u> polyatomic molecules C. polyatomic ions		B. ionic D. diato	compo mic m	ound olecule	
31 What is the conjugate as	id of USO -2				
A. $H_2SO_4^-$	B.HSO ₄	<u>(</u>	<u>C</u> .H₂SO	4	D.SO4 ²⁻
22. A sample of orange juice	has a hydroxide conce	entration	of 3.5	x 10^{-11} M. What is the	рН? D 10.46
/. 5.11	0.0.01	<u> </u>	<u></u> 3.34		D. 10.40
23. A liquid has a pH of 3.85 A. 7.1 x 10 ⁻³	. What is the [H ₃ O ⁺]? B. 1.4 x 10 ⁻³	<u>(</u>	<u>C.</u> 1.4 >	< 10 ⁻⁴	D. 7.1 x 10 ⁻⁴
24. Statement, electrons filA. Aufba principleC. Puali's exclusion principle	l the orbital singlet, the	en double <u>B.</u> Hund D. none	e up is 's rule of the	called	
25. For n = 4, what are the p A. 3, 2, 1	ossible values of L? B. 4, 3, 2, 1	<u>(</u>	<u>C.</u> 3, 2,	1, 0	D. 4, 3, 2, 1, 0
26. What is the maximum nu A. 1	umber of electrons that B. 3	t can occi (upy the	e subshell 3d?	D. 10
	-		-		
27. A KOH solution convertA) Blue to redB) R	s color of a litmus pape ed to orange C) Blue	er e to violet	t	<u>D</u>) Red to blue	

28. Which of t A. n = 2, l = 0 C. n = 2, l = 1	:he follo) L , m = -:	wing quantur 1	n numbe	er combin B <u>D</u>	atic 3. <u>).</u>	ons is incorrect for an orbital n = 1 , l = 0 , m = 0 n = 2 , l = 0 , m = -1 , s = + ½	designation?
29. The electr A. [Ne]4s ²	onic cor	nfiguration of <u>B.</u> [Ar	Vanadiu ⁻]4s²		C. [Ar]4s ² 3d ³	D. [Ar]4s ² 3d ⁴	
30. Which one A)1S	e of the B)	following orb 2P	itals is ir <u>C)</u>	correct? 2F		D) 4d	



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Name	:(الاسم)		•••••	•••••	
Section	(الشعبة) ٢	•			

Student No. (الرقم الجامعي):..... Instructor 2 Name (اسم المدرس):.....

52 **Te**

elluriun 127.60

Po

(209)

69 Tm Thulium

168.93

101 **Md**

53

lodine 126.90

Ăt

(210)

70 Yb

173.04

102 **No**

Хe

Xenon 131.29

Ř'n

(222)

71 Lu

174.97

Lr

50 Sn

Tin 118.71

Pb

207.2

Sb

Antimony 121.76

Bi

Bismuth 208.98

48 Cd

Cadmium 112.41

Hg

200.59

40

Īn

Indium 114.82

81 **TI**

204.38

Th

Q1)

/30 marks

39 **Y**

Yttrium 88.91

57 La

138.91

89 Ac

(227)

38 Sr

Strontiur 87.62

Ba

Barium 137.33

88 Ra

Rb

Rubidiun 85.47

Cs

Cesium 132.91

87 **Fr**

(223)

40 **Zr**

Zirconiu 91.22

Η̈́f

178.49

104 Rf

(261)

41 **Nb**

Niobium 92.91

Ťa

180.95

105 Db

(262)

58 Ce

140.12

90 **Th**

42 **Mo**

95.94

ŵ

lungster 183.84

106 **Sg**

(266)

43 **Tc**

(98)

Re

186.21

Bh

(264)

Ru

101.07

Ôs

190.23

108 **Hs**

(269)

Rh

102.91

Îr

Iridium 192.22

109 **Mt**

(268)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

	R = 0	.0821	L.atn	n / m	ol.K													
T(°C) = [T(°F) – 32] x 5/9 T(°F) = (9/5)×						x T(°F	=) + 3 2	2			Т(К)	= T(°(C) + 2	73.15	5			
1atm = 7	60 mm	Hg = 7	60 to	rr	pH = - log [H₃O⁺]			Av	ogad	ro's N	lo = 6	5.022	× 10²	3				
Hyr 1 Lit	1 H drogen 1.01 3 4 Be Berylliur 9.01 9.01 1.1 12	1										5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01 15	8 O Oxygen 16.00	9 F Fluorine 19.00	2 He Helium 4.00 10 Neon 20.18 18	
So 21	Na Mg Magnesiu 2.99 24.31	m										Al Aluminum 26.98	Silicon 28.09	Phosphorus 30.97	S Sulfur 32.07	Cl Chlorine 35.45	Ar Argon 39.95	
Pota	19 20 K assium 9,10 40.08	21 Sc Scandium 44,96	22 Ti Titanium 47.87	23 V Vanadium 50,94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58,69	29 Cu Copper 63.55	30 Zn Zinc 65,39	31 Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80	

Pd

106.42

Ρt

Platinum 195.08

Pall

Ag Silver

107.87

Âu

196.97

59	60	61	62	63	64	65	66	67	68
Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dv	Ho	Er
raseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbiu
140.91	144.24	(145)	150.36	151.96	157.25	158.93	162.50	164.93	167.3
91	92	93	94	95	96	97	98	99	100
Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fn
Protactinium	Uranium	Neptunium	Plutonium	Americium	Curium	Berkelium	Californium	Einsteinium	Fermi
231.04	238.03	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257

Question 2: /3 Pts

5.50 g CH₄ gas occupies 9.60 liters at 889 torr. Calculate the temperature of gas in ^{0}C ?

Question 3: /3 Pts

If the pH of a solution is 6.30, what are the molar concentrations of $H^+(aq)$, $OH^-(aq)$, and pOH in the solution?

Question 4: /3 Pts

CH₄ reacts with Cl₂ to produce CCl₄ + HCl as following reaction

 $CH_4 + Cl_2 \rightarrow CCl_4 + HCl$

A mixture of 112.29 g of CH_4 and 167.5 of Cl_2 is allowed to react. Calculate amount of CCl_4 :

Q1) Choose the most accurate answer from the questions below and select the correct choice in the box:

1. The amount of methanol A. 3.85 <u>B.</u> 11.	(CH₃OH), is required to 17	prepare a solution 4 C. 1.77 x 10	485.0 mL of 0.72	M CH₃OH is: D. 3.85 x 10 ⁻²
 2. Forty centimeters is equa A. 4.00 x 10⁻¹⁰nm 	l to how many nanome B. 4.00 x 10 ¹² nm	ters? <u>C.</u> 4.00 x 10	⁸ nm	D. 4.00 x 10 ⁻¹⁵ nm
3. Convert 80 °C into Fahren A. 76.4 ºF	heit <u>B.</u> 176 ⁰ F	C. 62.2 ⁰ F		D. 201 ⁰ F
4. For the following reaction $K_2CO_{3(aq)} + H_2SC$ <u>A.</u> 2K ⁺ and SO ₄ ²⁻ C. 2K ⁺ and CO ₃ ²⁻	a, the spectator ions are $D_{4(aq)}$ → K ₂ SO ₄ + H ₂ CO ₃	B. $2H^+$ and $SO_4^{2^-}$		
5. Which of the following na A. I_2O_5 , iodine pentoxide <u>C.</u> N_2O_4 , Dinitrogen tetraoxi	ime is correct for given	chemical formula? B. LiNO ₃ , lithium(I) D. PbI ₂ , lead(II) iodi	nitrate ide	
6. Which of the following state A. The volume of a gas is involute B. The pressure of a fixed and C. The relationship between <u>D</u> . Both B and C.	atement is correct? rersely proportional to t nount of gas is directly pressure (P) versus 1/v	the number of mole proportional to the volume (1/V) is direc	s of the gas prese moles of the gas. ctly proportional.	nt.
7. The density of a gaseous and Mwt of H = 1.01 g/mol). <u>A.</u> C_3H_8	organic compound is 3 . The compound is: B. C4H ₁₀	3.38 g/L at 40°C and C. C ₂ H ₆	d 1.97 atm (Mwt	of C = 12.01 g/mol D. C ₄ H ₈
8. The unpaired electrons in A. 0 \underline{B} . 1	Cl is: C. 2	D.	3	
9. Perform the following cal (145.7 g/mL)(3.00 mL) = A. 437.1 g	culations and round off B. 386.3 g	the answers to the <u>C.</u> 437 g	proper significan	t figures. D. 386.34 g
10. The mass of KBr needed <u>A.</u> 42.4 g	to prepare 250 mL of a B. 51.0 g	0.707 <i>M</i> KBr solut C. 7.50 g	ion.	D. 30.0 g
11. Which of the following s A. Acid-base reactions produ <u>B.</u> Half-reaction does not sh C. The reversible reaction ca D. Electrolyte is a substance	tatement is incorrect? uce water and salt. ow the electrons involv in occur in both direction that, when dissolved in	ed in a redox reactio ons. n water.	on.	
12. Which of the following e A. Na	element is diamagnetic <u>3.</u> Ca	<u>C</u> . Cs	D. Al	
13. What is the conjugate ad	cid of HSO₄⁻?	8		

A.HSO ₄	SO ₄ <u>B.</u> H ₂ SO ₄		D.SO4 ²⁻
14. A sample of orange juice A. 3.31	has a hydroxide conce B. 3.11	entration of 3.5 x 10 ⁻¹¹ M. <u>C.</u> 3.54	What is the pH? D. 10.46
15. A liquid has a pH of 3.85. A. 7.1 x 10 ⁻³	What is the [H ₃ O ⁺]? <u>B.</u> 1.4 x 10 ⁻⁴	C. 1.4 x 10 ⁻³	D. 7.1 x 10 ⁻⁴
16. Statement, electrons fill <u>A.</u> Hund's rule C. none of these	the orbital singlet, the	n double up is called B. Aufba principle D. Puali's exclusion prin	 ciple
17. For n = 4, what are the p <u>A</u> 3, 2, 1, 0	ossible values of l? B. 3, 2, 1	C. 4, 3, 2, 1	D. 4, 3, 2, 1, 0
18. What is the maximum nu A. 3	umber of electrons tha B. 5	t can occupy the subshell <u>C</u> . 6	3p? D. 10
19. Write the electron config <u>A.</u> [Ar]4s ¹ 3d ¹⁰	guration for the atom (B. [Ar]4s ² 3d ¹⁰	Cu (29 e's) C. [Ar]4s ² 4d ⁹	D. [Kr]4s ¹ 3d ¹⁰
20. The volume (L) occupied A. 4.752×10^4	by 44.6 g of CO ₂ at 0 C <u>B.</u> 22.7	Cand 760 mmHg is: C. 47.52	D. 1.410
21. Which of the following g \underline{A} . Cl_2	as has higher density a B. CH4	t 0 C and 760 mmHg con C. CO ₂	dition? D. O ₂
22. Which of the following is temperature and a	not a statement of Bo	yle's law? All statements	assume constant
A. V α 1/P	<u>B.</u> P/V = constant	C. P = constant/	/ D. PV = constant
23. Calculate the pH of a s basic, or neutral.	olution if it's $[OH^-] = 0$	0.000700 M and indicate	whether the solution is acidic,
<u>A.</u> 10.8, basic	B. 3.15, acidic	C. 17.2, basic	D. 11, basic
24. Which one of the conjug A. HS^{-} for H_2S	ate bases of the follow <u>B.</u> H ₂ SO ₄ for HSO ₄ ⁻	ring Brønsted-Lowry acids C. ClO ⁻ for HClO	is incorrect? D. NH_3 for NH_4^+
25. Which one of the followi A. Mg <u>B</u> . K	ng is alkali metal C.Be	D	. Sc
26. Which of the following a A. HF	cids consider as a stroi B. HCN	ng acid? <u>C.</u> HClO₄	D. HNO ₂
27. The bond between oxygen	atoms in O ₂ molecule is	:	
 A) single covalent bond B) double covalent bond C) ionic bond D) Triple covalent bond 			

28. Which one	e of the f	following orbital	ls is in	correct?		
A)1S	B)	2P	C)	2F	D)	4d
29. Which of t	he follo	wing quantum n	umbe	er combinat	ions is incorrect for an	orbital designation?
A. n = 2, l = 0)			В.	n = 1 , l = 0 , m = 0	
<u>C.</u> n = 2 , l =	0 , m = -	1 , s = + ½		D.	n = 2 , l = 1 , m = -1	
30. The oxidat	ion num	bers to the all e	eleme	nts in the N	$1nO_4^{-}$ ion (Mn, O) are:	
A. (+8, -2)		<u>B.</u> (+7, -2	2)		C. (+6, -2)	D. (+5, -2)



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Name (الاسم):..... Section (الشعبة):.... Student No. (الرقم الجامعي):..... Instructor 3 Name (اسم المدرس):.....

<u>Q1)</u> /30 marks

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

R = 0.0821 L.atm / I	mol.K			
T(°C) = [T(°F) – 32] x 5/9	T(°F) = (9/5)	(T(°F) + 32		T(K) = T(°C) + 273.15
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1 H Hydrogen 1.01																	2 He Helium 4.00
3 Li Lithium	4 Be Beryllium											5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
6.94 11 Na Sodium 22.99	9.01 12 Mg Magnesium 24.31											10.81 13 Al Aluminum 26.98	12.01 14 Si Silicon 28.09	14.01 15 P Phosphorus 30.97	16.00 16 S Sulfur 32.07	19.00 17 CI Chlorine 35.45	20.18 18 Ar Argon 39.95
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58,93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65,39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78,96	35 Br Bromine 79.90	36 Kr Krypton 83.80
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn ^{Tin} 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 lodine 126.90	54 Xe Xenon 131.29
55 Cs Cesium 132.91	56 Ba Barium 137.33	57 La Lanthanum 138.91	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 TI Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh ^{Bohrium} (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)									
				58	59	60	61	62	63	64	65	66	67	68	69	70	71
				Cerium 140.12	Pr Praseodymium 140.91	Neodymium 144.24	Promethium (145)	Samarium 150.36	Europium 151.96	Gadolinium 157.25	Tb Terbium 158.93	Dysprosium 162.50	Ho Holmium 164.93	Er Erbium 167.26	Tm Thulium 168.93	Yb Ytterbium 173.04	Lu Lutetium 174.97
				90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

Question 2: /3 Pts

2.50 g CO₂ gas occupies 5.60 liters at 789 torr. Calculate the temperature of gas in $^{\circ}$ C?

Question 3: /3 Pts

If the pH of a solution is 6.30, what are the molar concentrations of $H^+(aq)$, $OH^-(aq)$, and pOH in the solution?

Question 5: /3 Pts

CH₄ reacts with Cl₂ to produce CCl₄ + HCl as following reaction $CH_4 + Cl_2 \rightarrow CCl_4 + HCl$ A mixture of 52.29 g of **CH₄** and 77.5 of **Cl₂** is allowed to react. Calculate amount of **CCl₄**:

Q1) Choose the most accurate answer from the questions below and select the correct choice in the box:

1. Which of the following statement is incorrect?

A. Electrolyte is a substance that, when dissolved in water.

B. The reversible reaction can occur in both directions.

C. Acid-base reactions produce water and salt.

<u>D.</u> Half-reaction does not show the electrons involved in a redox reaction.

2. Which one of th	ie conjugate bases o	f the following B	rønsted-Lowry acids is ir	ncorrect?
A. NH_3 for NH_4^+	B. ClO⁻ fo	or HClO	C. HS^{-} for H_2S	<u>D.</u> H ₂ SO ₄ for HSO ₄ ⁻
3. Which one of the	following element ex	ist in forth raw in	the periodic table?	
A) Y	B) N	C) Pb	D) Ga	
4. Which of the fo A. $n = 2$, $l = 0$	llowing quantum nu	mber combinatio B.	ons is incorrect for an or n = 2 , l = 0 , m = -1 , s =	bital designation? = + ½
C. n = 2, l = 1, m	= -1	D.	n = 1 , l = 0 , m = 0	
29. The oxidation A. (+8, -2)	numbers to the all e <u>B.</u> (+7, -2	lements in the N !)	1nO₄⁻ ion (Mn, O) are: C. (+6, -2)	D. (+5, -2)
6. Which one A)1S B)	of the following orb 2P	itals is incorrect <u>C)</u> 2F	? D)	4d
7. Which of the fo	llowing acids conside	er as a strong aci	d?	

<u>A.</u> HClO ₄	B. HF	C. HCN	D. HNO ₂					
8. The unpaired electr A. 0 B. 1	ons in C is: <u>C</u>	<u>.</u> 2 D. 3						
9. What is the conjuga A. H₂SO₄ [−]	ate acid of HSO ₄ -? <u>B.</u> H ₂ SO ₄	C.HSO4	D.SO4 ²⁻					
10. A sample of orang A. 3.31	e juice has a hydroxide <u>B.</u> 3.54	e concentration of 3.5 x 10 ⁻¹¹ M. Wl C. 10.46	nat is the pH? D. 3.11					
11. A liquid has a pH o A. 1.4 x 10 ⁻³	of 3.85. What is the [H ₃ B. 7.1 x 10 ⁻³	₃O⁺]? <u>C.</u> 1.4 x 10 ⁻⁴	D. 7.1 x 10 ⁻⁴					
12. KCl is D) Diatomic ion	C) Diatomic molecule	B) Polyatomic molecule A) Io	nic compound					
 13. Which of the following statement is correct? A. The relationship between pressure (P) versus 1/volume (1/V) is directly proportional. B. The volume of a gas is inversely proportional to the number of moles of the gas present. C. The pressure of a fixed amount of gas is directly proportional to the moles of the gas. D. Both A and C. 								
14. The amount of eth A. 1.77 x 10 ⁻²	nanol C₂H₅OH is requir B. 3.85	ed to prepare a solution 85.0 mL of C. 3.85 x 10 ⁻²	0.453 M C₂H₅OH is: <u>D.</u> 1.77					
15. The density of a ga <u>A.</u> CO	aseous compound is 2. B. C ₄ H ₈	.91 g/L at 20°C and 2.50 atm, The co C. C ₄ H ₁₀	D. C ₂ H ₆					
16. The volume (L) oce A. 4.752 x 10 ⁴	cupied by 44.6 g of CO <u>B.</u> 22.7	² at 0 C and 760 mmHg is: C. 47.52	D. 1.410					
17. Which of the follo A. CH ₄	wing gas has higher de B. CO ₂	ensity at 0 C and 1 atm condition? C. O_2	<u>D.</u> Cl ₂					
18. Which of the follo temperatureA. P = constant/V	wing is <i>not</i> a statemen e and amount of gas. Β. V α 1/Ρ	it of Boyle's law? All statements ass C. PV = constant	ume constant <u>D.</u> P/V = constant					
19. Draw Lewis struct A) 0	ure of Cl ₂ molecule, hc B) 2	ow many lone pairs in this molecule C) 3 <u>D)</u> 6						
20. For the following r $K_2CO_{3(aq)}$ - A. 2H ⁺ and SO ₄ ²⁻ C. 2H ⁺ and CO ₃ ²⁻ 21. The angular moment	Teaction, the spectator + H ₂ SO _{4(aq)} \rightarrow K ₂ SO ₄ + H entum quantum numb	⁻ ions are: H ₂ CO ₃ B. 2K ⁺ and CO ₃ ²⁻ <u>D.</u> 2K ⁺ and SO ₄ ²⁻ er is						

<u>A)</u> L	B) ms	C) n	D) ml						
22. Statement, electr A. Aufba principle C. Puali's exclusion pri	ons fill the orbital singlet nciple	, then double <u>B.</u> Hund's D. none o	hen double up is called <u>B.</u> Hund's rule D. none of these						
23. Which one of the f A) Ca ⁺² and Ar	following pairs is isoelect B) Cl and A	ronic Ar C) F- a	ind Mg+	D) Na and N	е				
24. The mass of NaNO A. 7.50 g	9₃ (Mwt = 84.98 g/mol) ne B. 30.0 g	eeded to prepa <u>C</u>	are 250 mL of a <u>.</u> 15.0 g	0.707 <i>M</i> NaN	IO₃ solution. D. 51.0 g				
25. For n = 4, what are B. 4, 3, 2, 1	e the possible values of I? <u>B.</u> 3, 2, 1, 0	C	. 4, 3, 2, 1, 0		D. 3, 2, 1				
26. What is the maxim A. 1	num number of electrons B. 3	that can occu C	py the subshell . 5	3d?	<u>D.</u> 10				
27. Which of the follow A. I_2O_5 , iodine pentoxi <u>C.</u> PbI ₂ , lead(II) iodide	wing name is correct for a de	given chemica B. LiNO ₃ , D. H ₂ SO4	l formula? lithium(l) nitra , hydrosulfuric a	te acid					
 28. Perform the follow (42.927 g/mL)(9.00 m) A. 386.343 g 29. Calculate the pH 	ving calculations and roun L) = <u>B.</u> 386 g of a solution if it's [OH ⁻	nd off the ans C] = 0.000700	wers to the pro . 386.3 g M and indicate	per significan whether the	t figures. D. 386.34 g solution is acidic,				
basic, or neutral. <u>A.</u> 10.8, basic	B. 3.15, acidic	C	. 17.2, basic		D. 11, basic				
30. Write the electron A. $[Ar]4s^23d^{10}$	configuration for the ato B. [Ar]4s ² 4d ⁹	om Cu (29 e's) C	. [Kr]4s ¹ 3d ¹⁰		D. [Ar]4s ¹ 3d ¹⁰				