College of Industrial Technology King Mongkut's University of Technology North Bangkok

-	d å
	เลขที่นั่งสอบ

Fi	inal Ex	camination of Seme	ester 1		Year: 2014
S	ubject	: 392151 Chemistry			Section: 15 -16
	-	2 December 2014			Time: 10.00-12.00
			ID:	Clas	SS:
Ir	nstruct	ions:			
1	. Che	ating will result in fa	illure of all classes re	gistered for the current	semester. Students who
		Ŧ		tering for the following	
2	. No	documents are allow	ved to be taken out o	of the examination room	m.
3	. Two	line display calcula	ators are allowed in th	ne examination	
4	. This	exam is a closed be	ook examination.		
5	. Elec	tronic communicati	on devices are not al	lowed in the examinati	on room.
6	. The	examination has 6	pages (including this p	page), 3 sections and a	total score of 50 points.
7	'. Writ	e all your solution a	and answer on this ex	ammation sheet	
			୍ ମ୍ୟୁଣି ^{ର୍ଷ}	(0)	
			SITNUPLAY		
		Sale	and answer on this ex		
					T-t-I
		Part 1	Part 2	Part 3	Total

Part 2

Part 1

Score

WebElements: the periodic table on the world-wide web

18 2 2 4.0026	20.18 B 6 00 00 00 00 00 00 00 00 00 00 00 00 0	18 18 39.948	9 2	X X X 151.29	* % %	
11	9 9 18.938	35.453	in m	53 — 53 128.90	85 Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	
6	03ygen 8 0	32.065	Serium Se	127.60	2 Q 20	
15	N 7 N 14.007	15 15 30.874	AS AS	Sb 121.76	2 2 2	
4	Carbon 6 0 12.011	28.086	germanlum 32 Ge	SS 25 118.71	Pb	Uuq
13	5 W 10.811	13 13 A 26.982	gallium 3.1 Gal	69.723 indium 49	84 81 204.38	
. 4	L		Z _n	65.39 cadmium 48 Cd 112.41	80 80 200.58	Cub Erra
=			Copper	Ag to the state of	AU 7981	Und [272]
10			7 88 Z	26.63 D 24.83	78 78 195.08	Cun [27.1]
			Cobat	58.933 rhodium 45 102.91	Hdium 77 	109 NA ZSSS
œ			T 26	SS. 845 ruthenium 44 ACC	OSTRIUM 76 0S 190.23	108 T 208
2			Mn Mn	54.938 technetium 43 C	Re 1821	107 H
6		Comment and		51.996 molybdenum 42 MO 95.84	-	-
ភេ	atomic number symbol		vanadium 23	50.942 nlobium 41 ND 92.906	73 73 — — 180.85	405 105 12621
4	atol	auther were	Hamium 22	40 40 X	72 72 • Hf 178.49	104 104 [261]
m	*		SC SC		LU 174.97	103 103 [Eq.
					\$7.70	89-102 **
	Beryffum A	Mg Mg	C Solum	38 38 ST	137.33 CD 55.03	28 8 8 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
L - I	1,0079 Biblium 3	1	potessium 19	33.098 rubldium 37 Rb	SS 52 182.91	1 87 87 E223
L			1 19		1	

					and the same	Discountrie orm	an southful life	markell missen	terbism	dvsproslum	holmium	erbium	thullum	ytterbinm
	lanthanum	Centum	prasecoymum	medaymum	promona	C.S	200	Ed	A.	RR	67	88	69	20
	C	200	200	3	0	70	20	5	3		;			
		(-		OTTO THE PERSON NAMED IN	•	Market Street	-		C			-	
*lonthonoide	•			7	3	8						L		
		0	100	5			3	5)		5 6	}
	42000	440 45	140.01	144 24	1145	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.04
	130.81	140.16	10.01			and observed trees	comprising	Curium	herkellum	californium	einsteinium	fermium	mendelevium	nobelam
	actuals	month	protection .	CHAMBER OF THE PARTY OF THE PAR	HOPENHALIN	מחוות שמווים	COLLEGE		-	00	-	400	404	400
	80	6	16	25	60	76	200	96	78	000	ממ	201	2	300
	3	3		! ;		1	-	(matter at	-	Spinner	Blood		
44	-				2				7	-	L			
"actinoids	1		7			3		5		5				
)			1	-	1000	ME 41	16363	1257	DERI	PROI
	1227	232.04	231.04	238.03	237	244	243	747	747	100	202	100	200	
														of fee the property

Symbols and names: the symbols and names of the elements, and their spellings are those recommended by the International Union of Pure and Applied Chernistry (UPAC - http://www.lapac.org). Names have yet to be proposed for the most recently discovered elements 110-112 and 114 so those used here are ILPAC's temporary systematic names. In the USA and some other countries, the spellings aluminum and cestum are normal while in the UK and element ILPAC convention.

Alonin weights innean relative masses): Apart from the hardest elements, these are the ILPAC 2001 values and given to 5 significant figures. Elements for which the atomic weight is given within square brackets have no stable nuclides and are represented by the elements forget lived lookpe.

S2002 Dr Mark J Winter [WebElements Ltd and University of Sheffield, webelements@eheffield, ac. uk]. All rights reserved. For updates to this table see http://www.webelements.com/webelements/support/media/pdf/. Version date: 3 Apr 2002.

Part 1 Multiple Choice (15 points)

Choose the letter of the choice in the answer table that best completes the statement or answers the question.

Question no.	a.	b.	c.	d.
1				
2				
3				
4				
5				

Question no.	a.	b.	C.	d.
6				
7				
8				
9				
10				

1.	Calculate	the	mass	of	1.00	mol	of	SCl ₂	
----	-----------	-----	------	----	------	-----	----	------------------	--

- a. 51 amu
- b. 51 g
- c. 103 amu
- d. 103 g
- 2. How many moles of hydrogen atoms are present in 1.25 mol of CH₄?
 - a. 4 mol
- b. 5 mol
- c. 7 mol
- d. 8 mol
- 3. Which of the following has the greatest relative molecular (formula) mass?
 - a Fe
- b H₂SO₄
- d Zn(NO₃)₂
- 4. Which of the following has the greatest number of atoms?
 - a. 1 atom
- b. 1 mol of He control of atom \div (6.02×10²³)
- d. 1 mol of NH₃

- 5. Calculate the number of molecules of SO_2 in 2 mol of SO_2 .
 - a. 3.86×10^{23}
- b. 4.01×10^{23}
- c. 6.02×10^{23}
- d. 1.204×10^{23}
- 6. Which of the following metal samples have the greatest mass?
 - a. 100 g of Cu
- b. 4.0 mol of Fe
- c. 3.0 mol of Ag
- d. 2.0 mol of Au
- 7. The coefficients in a chemical equation represent the
 - a. masses, in grams, of all reactants and products.
 - b. relative numbers of moles of reactants and products.
 - c. number of atoms in each compound in a reaction.
 - d. number of valence electrons involved in the reaction.
- 8. Determine percentage of hydrogen in water.
 - a. 5 %
- b. 12 %
- c. 38%
- d. 66%
- 9. How many moles of CO₂ are present in a 0.56 dm³ sample at STP?
 - a. 0.025 mol
- b. 0.10 mol
- c. 0.30 mol
- d. 0.50 mol
- 10. For the reaction $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$, how many moles of oxygen are required to react with 2 mol of methane, CH₄?
 - a. 2 mol
- b. 4 mol
- c. 10 mol
- d. 20 mol

		ching (10 points) erms <i>below</i> with <i>d</i>	efinitions, placing th	e appropria	ate letter in the spac	ce against the
nu	mber.					
	1. 1	l mole	a. 1.66×10^{-24} g			
_	 2. 1	l amu	b. 6.02×10^{23}			
	 3. r	molar mass	c. A temperature	of 0°C and	a pressure of 0.987	atm
	4. 9	STP	d. It contains the 12g of ¹² C- ator		oer of particles as th	ere are in
	5. <i>F</i>	Avogadro number	e. The mass of ea	ch differen	t element present in	the compound
			f. The sum of the	relative ato	omic masses in a co	mpound
			g. The mass conta	ains in one	mole of substance	
Pa	rt 3 Writ	te your answer in 1	the space provided	for each	question (25 points	;)
					om the following dat	
	Isotope	Natural Relative	Relative atomic	Isotope	Natural Relative	Relative atomic
		Abundance (%)	mass	algi, I's	Abundance (%)	mass
	²⁰⁴ Pb	1.5	mass 203.8 (1975)	²⁰⁷ Pb	22.6	206.7
	²⁰⁶ Pb	23.6	203.8	²⁰⁸ Pb	52.3	207.7
		2018	7,61			
-						
2.	Calculate	the percentage co	emposition by mass	of C in (CH	₃) ₂ CO.	(2 points)
_						
3.	A compo	und was analyzed	in the laboratory an	d found to	contain 69.94% iron	and
	30.06%	oxygen. Is the comp	oound iron(II) oxide,	FeO, or iro	n(III) oxide, Fe₂O₃?	(2 points)
-						

4.	(a) Determine the <i>molecular mass</i> of ethanoic acid (CH ₃ COOH)	
	(b) Determine the number of moles of oxygen atoms in 50.0 g of ethanoic acid	
	(c) Determine the number of <i>hydrogen atoms</i> in 50.0 g of ethanoic acid	(5 points)
	10987 5584	
	र द्वीव्कित ।	
5.	(a) How many moles of N_2 in A_2 of N_2 ? (b) What volume will A_2 of A_2 occupy at STP?	
	(b) What volume will 42° of N ₂ occupy at STP?	(4 points)
_		

(3 points) 6. Balance the following reactions: $La_2O_3(s) + \underline{\hspace{1cm}} H_2O(l) \longrightarrow \underline{\hspace{1cm}} La(OH)_3(aq)$ $_$ NCl₃(aq) + $_$ H₂O(l) \longrightarrow NH₃(aq) + $_$ HOCl(aq) (b) $\underline{\hspace{1cm}} \mathsf{CH_3NH_2(g)} + \underline{\hspace{1cm}} \mathsf{O_2(g)} \hspace{0.3cm} \longrightarrow \underline{\hspace{1cm}} \mathsf{CO_2(g)} + \underline{\hspace{1cm}} \mathsf{H_2O(g)} + \underline{\hspace{1cm}} \mathsf{N_2(g)}$ (c) 7. The incandescent white of a fireworks display is caused by the reaction of phosphorous (P) (6 points) with O_2 to give P_4O_{10} as the following unbalanced equation. $P + O_2 \rightarrow P_4O_{10}$ How many moles of O₂ are required to react with 2 mol of P? (a) How many grams of O_2 are needed to combine with 6.85g of P? (b) How many grams of P_4O_{10} can be made from 8.00g of O_2 ? (C)