Student Name:

Student ID #

Instructor: Dr. Emad Akeer

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

2 Points each

 A combination A) compou B) homoger C) pure sub D) heteroger E) solid 	n of sand, salt, and wa nd neous mixture ostance oneous mixture	ter is an example of a			1)
2) Which one of A) N, neon B) S, sodiun C) Tn, tin D) Fe, iron E) B, bromi	the following has the o n ne	element name and syn	nbol correctly matcl	hed?	2)
3) An element ca A) be separ B) be a pur C) be part c D) interact E) be part c	annot ated into other substa e substance of a homogeneous mix with other elements to of a heterogeneous mix	nces by chemical mean ture o form compounds xture	ns		3)
4) Which one of A) mass B) density C) tempera D) boiling p E) melting	the following is <u>not</u> ar ture point point	n intensive property?			4)
5) Which one of A) 302 K B) 38 °C C) 96 °F D) none of f E) the freez	the following is the hi the above ting point of water	ghest temperature?			5)
6) How many sig A) 2	gnificant figures are ir B) 4	n the measurement 500 C) 1	00 g? D) 5	E) 3	6)

nt Name: Student ID #							
7) Of the objects below, is the most dense.							
A) an object with a volume of 0.00212 m ³ and a mass of 4.22 \times 10 ⁴ mg B) an object with a volume of 139 mL and a mass of 93 g							
C) an object with D) an object with	a volume of 3.91 » a volume of 2.5 L	and a mass of 12.5 kg	ss of 7.93 × 10− ¹ ng				
E) an object with	a volume of 13 dn	n ³ and a mass of 1.29	κ 10 ³ g				
8) A wooden object ha the object determine	s a mass of 10.782 ed to an appropria	g and occupies a volu te number of significa	me of 13.72 mL. Whan t figures?	at is the density of	8)		
A) 8 × 10-1 g/mL							
B) 7.9 × 10−1 g/m	ιL						
C) 7.86 × 10 ⁻¹ g/r	nL						
D) 7.859 × 10 ⁻¹ g	/mL						
E) 7.8586 × 10 ^{−1}	g/mL						
9) The nucleus of an at	tom does not conta	iin			9)		
A) neutrons							
B) subatomic par	ticles						
C) electrons							
D) protons or neu	itrons						
E) protons							
10) Which pair of eleme	ents would you ex	pect to exhibit the grea	itest similarity in the	ir physical and	10) _		
A) C, O	B) Ca, Sr	C) H, Li	D) Cs, Ba	E) Ga, Ge			
11) An element in the u	pper right corner (of the periodic table	·		11) _		
A) is definitely a	nonmetal						
B) is either a met	al or metalloid						
C) is either a met	alloid or a nonmet	al					
D) is definitely a	metal						
	metalloid						
E) is definitely a							
E) is definitely a12) Of the choices below	v, which one is <u>not</u>	t an ionic compound?			12) _		
E) is definitely a 12) Of the choices belov A) RbCl	v, which one is <u>not</u> B) MoCl ₆	t an ionic compound? C) PbCl ₂	D) PCl5	E) NaCl	12) _		
 E) is definitely a 12) Of the choices below A) RbCl 13) There are 	v, which one is <u>not</u> B) MoCl ₆ protons,	t an ionic compound? C) PbCl ₂ neutrons, and	D) PCl5 electrons in ²³⁸ U	E) NaCl +5 _.	12) _ 13) _		
 E) is definitely a 12) Of the choices below A) RbCl 13) There are A) 92, 146, 92 	v, which one is <u>not</u> B) MoCl ₆ protons,	an ionic compound? C) PbCl2 neutrons, and	D) PCl5 electrons in ²³⁸ U	E) NaCl +5 _.	12) _ 13) _		
 E) is definitely a 12) Of the choices below A) RbCl 13) There are A) 92, 146, 92 B) 92, 92, 87 D) 111 (111) 	v, which one is <u>not</u> B) MoCl ₆ protons,	t an ionic compound? C) PbCl ₂ neutrons, and	D) PCl5 electrons in ²³⁸ U	E) NaCl +5 _.	12) _ 13) _		
 E) is definitely a 12) Of the choices below A) RbCl 13) There are A) 92, 146, 92 B) 92, 92, 87 C) 146, 92, 92 D) 146, 92, 91 	v, which one is <u>not</u> B) MoCl ₆ protons,	an ionic compound? C) PbCl ₂ neutrons, and	D) PCl5 _ electrons in ²³⁸ U	E) NaCl +5 _.	12) _ 13) _		
 E) is definitely a 12) Of the choices below A) RbCl 13) There are A) 92, 146, 92 B) 92, 92, 87 C) 146, 92, 92 D) 146, 92, 146 E) 92, 146, 97 	v, which one is <u>no</u> B) MoCl ₆ protons,	an ionic compound? C) PbCl2 neutrons, and	D) PCl5 electrons in ²³⁸ U	E) NaCl +5 _.	12) _ 13) _		
 E) is definitely a 12) Of the choices below A) RbCl 13) There are A) 92, 146, 92 B) 92, 92, 87 C) 146, 92, 92 D) 146, 92, 146 E) 92, 146, 87 	v, which one is <u>no</u> B) MoCl ₆ protons,	an ionic compound? C) PbCl ₂ neutrons, and	D) PCl5 _ electrons in ²³⁸ U	E) NaCl +5 _.	12) _ 13) _		
 E) is definitely a 12) Of the choices below A) RbCl 13) There are A) 92, 146, 92 B) 92, 92, 87 C) 146, 92, 92 D) 146, 92, 146 E) 92, 146, 87 14) Which one of the following the following statement of the	v, which one is <u>not</u> B) MoCl ₆ protons, llowing compound	an ionic compound? C) PbCl2 neutrons, and ds is copper(I) chloride	D) PCl5 _ electrons in ²³⁸ U ?	E) NaCl +5 _.	12) _ 13) _ 14) _		

15) Of the reactions below, which one is <u>not</u> a combination reaction? A) C + O ₂ \rightarrow CO ₂ B) 2N ₂ + 3H ₂ \rightarrow 2NH ₃ C) CaO + H ₂ O \rightarrow Ca(OH) ₂ D) 2CH ₄ + 4O ₂ \rightarrow 2CO ₂ + 4H ₂ O E) 2Mg + O ₂ \rightarrow 2MgO					
16) The reaction used A) violates the B) is a decomp C) produces so D) is a combina E) is a combust	to inflate automobile law of conservation of osition reaction dium gas ation reaction tion reaction	e airbags of mass			16)
17) The formula of ni	trobenzene is C ₆ H ₅ N	NO_2 . The molecular	weight of this compo	und is	17)
amu. A) 109.10	B) 123.11	C) 43.03	D) 107.11	E) 3.06	
18) The mass % of C i	n methane (CH ₄) is	·			18)
A) 7.743	B) 133.6	C) 74.87	D) 92.26	E) 25.13	
19) When aqueous so A) K ₂ SO ₄ and B) NaI and KB C) NiBr ₂ and A D) KOH and Ba E) Li ₂ CO ₃ and	lutions of a CrCl ₃ r AgNO ₃ a(NO ₃) ₂ l CsI	re mixed, a precipita	ate forms.		19)
20) The net ionic equa	ation for the reaction	between aqueous su	llfuric acid and aqueo	us sodium	20)
hydroxide is A) 2H ⁺ (aq) + SO ₄ ²⁻ (aq) + 2Na ⁺ (aq) + 2OH ⁻ (aq) → 2H ₂ O (l) + 2Na ⁺ (aq) + SO ₄ ²⁻ (aq) B) H ⁺ (aq) + OH ⁻ (aq) → H ₂ O(l) C) H ⁺ (aq) + HSO ₄ ⁻ (aq) + 2Na ⁺ (aq) + 2OH ⁻ (aq) → 2H ₂ O (l) + 2Na ⁺ (aq) + SO ₄ ²⁻ (aq) D) H ⁺ (aq) + HSO ₄ ⁻ (aq) + 2OH ⁻ (aq) → 2H ₂ O (l) + SO ₄ ²⁻ (aq) E) SO ₄ ²⁻ (aq) + 2Na ⁺ (aq) → 2Na ⁺ (aq) + SO ₄ ²⁻ (aq)					
21) Which one of the A) mol solute/k B) mol solute/r C) mol solute/I D) mmol solute	following is a correct cg solvent nL solvent L solvent	expression for mola	rity?		21)

D) mmol solute/mL solution E) µmol solute/L solution

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

2 Points each

22) Mass and volume are often referred to as properties of substances.	22)
23) Gases do not have a fixed as they are able to be	23)
24) 1.035 × 10 ⁻⁴ L = mL	24)
25) The solvent in an aqueous solution is	25)

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

You must show your calculations and units clearly for credit or partial credit.

26) There should	l be significant	figures in the answ	er to the following co	mputation. 5 Points	26)
(10.0	07 + 7.395)				
	2.5				
A) 1	B) 2	C) 3	D) 4	E) 5	

- 27) An object will sink in a liquid if the density of the object is greater than that of the liquid. The mass 27) of a sphere is 9.83 g. If the volume of this sphere is less than _____ cm³, then the sphere will sink in liquid mercury (density = 13.6 g/cm^3). **5** Points A) 0.723
 - B) 7.48
 - C) 134
 - D) 1.38
 - E) none of the above

28) How many liters	of air are in a room that	measures 11.0 ft × 2	12.0 ft and has an	10.0 ft ceiling?	28)
1 in. = 2.54 cm (ex	xactly); $1 L = 10^3 cm^3$			5 Points	
A) 40.2	B) 3.74×10^4	C) 1.01 × 10 ⁶	D) 139	E) 4.02×10^7	

29) A certain mass o	f carbon reacts with 1	128 g of oxygen to for	rm carbon monoxide	grams of	29)
oxygen would re	eact with that same m	hass of carbon to form	n carbon dioxide, acc	ording to the law of	
multiple propor	tions.			5 Points	
A) 128	B) 25.6	C) 1280	D) 256	E) 64.0	

30) The combustion of propane (C₃H₈) in the presence of excess oxygen yields CO₂ and H₂O: 30) _____

C ₃ H ₈ (g) + $5O_2(g) \rightarrow 3CO_2$	$(g) + 4H_2O(g)$		5 Points
When 2.5 mol o	f O ₂ are consumed in	their reaction,	mol of CO ₂ are p	produced.
A) 6.0	B) 5.0	C) 1.5	D) 3.0	E) 2.5

 31) A compound that is composed of carbon, hydrogen, and oxygen contains 70.6% C, 5.9% H, and
 31)

 23.5% O by mass. The molecular weight of the compound is 136 amu. What is the molecular
 31)

 formula?
 7.5 Points

 A) C8H4O
 B) C5H6O2
 C) C8H8O2
 D) C9H12O
 E) C4H4O

32) Under appropriate conditions, nitrogen and hydrogen undergo a combination reaction to yield 32) _____ ammonia: 5 Points

 $N_2(g) + 3H_2(g) - 2NH_3(g)$

If the reaction yield is 87.5%, how many moles of N2 are needed to produce 3.00 mol of NH3?A) 1.5B) 2.32C) 0.166D) 1.71E) 1.00

Student Name:		Stu	ident ID #		
33) What is the conce water to give 350	ntration (M) of a N mL of solution?	aCl solution prepare	d by dissolving 9.3 g o	f NaCl in sufficient 5 Points	33)
A) 0.16	B) 27	C) 18	D) 0.45	E) 2.7 × 10 ⁻²	

34) A 17.5 mL sample of an acetic acid (CH3CO2H) solution required 29.6 mL of 0.250 M NaOH for						
neutralization. The	e concentration of a	cetic acid was	was M. 7.5 Points			
A) 0.158	B) 0.423	C) 0.214	D) 6.88	E) 134		

Answer Key Testname: SPRING 2017 CHEM1411

1) D 2) D 3) A 4) A 5) B 6) C 7) C 8) D 9) C 10) B 11) A 12) D 13) E 14) D 15) D 16) B 17) B 18) C 19) C 20) B 21) D 22) extensive 23) volume, compressed 24) 0.1035 25) water 26) B 27) A 28) B 29) D 30) C 31) C 32) D 33) D

34) B