ROSEDALE ACADEMY

SNC2D Unit Test – Chemistry

SNC2D Unit 4 Test
(80 Marks Total)

Name:_____

Signature:_____

Marks obtained:

Percentage:

Answers:

Section 1 True/False

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

****NOTE: ANSWER MULTIPLE CHOICE QUESTIONS IN THE TABLE ABOVE****

KNOWLEDGE 30 Marks

Part (A) Multiple Choice 30 Marks

****NOTE: ANSWER MULTIPLE CHOICE QUESTIONS IN THE TABLE ON PAGE 1****

1. Compounds formed by a metal giving an electron to a non-metal are:
   (a) covalent
   (b) solutions
   (c) ionic
   (d) elements

2. How many valence electrons are found in a neutral atom of Na?
   (a) one
   (b) three
   (c) six
   (d) two

3. When naming a compound
   (a) the non-metal is always named first.
   (b) the metal gets an -ide ending.
   (c) the metal is always named second.
   (d) the non-metal gets an -ide ending.

4. A polyatomic ion
   (a) is made of more than one element.
   (b) has no charge.
   (c) only contains metals.
   (d) always has a negative valence.

5. In a covalent compound, how do atoms complete their outer electron shells?
   (a) transferring electrons
   (b) sharing electrons
   (c) creating electrons
   (d) destroying electrons

6. Which one of the following has more than one possible valence charge?
   (a) sodium
   (b) magnesium
   (c) iron
   (d) lithium

7. Why does burning a log seem to disobey the Law of Conservation of Mass?
   (a) The log remains the same.
   (b) The gases escape and can't be measured.
   (c) The log actually gains mass when burned.
   (d) The log gains mass since gases attach themselves to the log.

8. Which of the following is not an acid?
   (a) HCl
   (b) NaCl
   (c) HF
   (d) H_2SO_4

9. What gas is given off when zinc reacts with hydrochloric acid?
   (a) hydrogen gas
   (b) chlorine gas
   (c) oxygen gas
   (d) zinc gas

10. What is the most common polyatomic ion found in bases?
   (a) SO_4^{-2}
   (b) CO_3^{-2}
   (c) $Cr_2O_7^{-2}$
   (d) OH^{-1}

11. Sodium and hydrochloric acid react to produce a salt and hydrogen gas.
   $Na + HCL \rightarrow NaCl + H_2$
   What kind of reaction is this?
   (a) decomposition
   (b) single displacement
   (c) double displacement
   (d) synthesis

12. Neutralization reactions occur between
   (a) a non-metallic oxide and a basic oxide.
   (b) an acid and a base.
   (c) a salt and water.
   (d) an acid and chocolate milk.

13. Neutralization reactions are a special type of:
   (a) synthesis reaction
   (b) double displacement reaction
   (c) single displacement reaction
   (d) combustion reaction

14. Which is the correct formula for iron (II) chloride?
    (a) Fe_2Cl_2
    (b) Fe_2Cl
    (c) FeCl
    (d) $FeCl_2$

15. Heating sodium bicarbonate, to produce water, CO_2, and sodium carbonate $NaHCO_3 \rightarrow NaCO_3 + H_2O + CO_2$ is a:
    (a) decomposition reaction
    (b) synthesis reaction
    (c) single displacement reaction
    (d) double displacement reaction

16. Which of the following are named using Roman numerals?
    (a) Compounds containing metals with multiple valences.
    (b) Compounds containing two non-metals.
    (c) Compounds containing a metal and a polyatomic ion
    (d) Compounds containing two polyatomic ions.

17. Which equation is not balanced?
    (a) $2C_2H_6 + 7O_2$ -----> $4CO_2 + 6H_2O$
    (b) $C_3H_8 + 5O_2$ -----> $3CO_2 + 4H_2O$
    (c) $C_6H_{18} + 10O_2$ -> $5CO_2 + 9H_2O + 2CO + C$
    (d) $C_5H_{12} + 8O_2$ -----> $5CO_2 + 6H_2O$

18. Copper (II) oxide is produced when copper reacts with oxygen by heating it in a flame. The reaction is $Cu + O_2 \rightarrow CuO$. What type of reaction is this?
    (a) synthesis
    (b) decomposition
    (c) single displacement
    (d) double displacement

19. Which one of the following describes a base?
    (a) It turns blue litmus paper red.
    (b) It dissolves in water to produce hydroxide ions.
    (c) It dissolves in water to produce hydrogen ions.
    (d) It reacts with carbonates to produce carbon dioxide gas.

20. Which type of bond creates molecules?
    (a) ionic
    (b) covalent
    (c) james
    (d) basic

21. A chemical that shows a solution to be acidic or basic is a(n):
    (a) acid
    (b) indicator
    (c) base
    (d) ionic compound

22. An ion composed of more than one atom is known as a(n):
    (a) cation
    (b) anion
    (c) polyatomic ion
    (d) What is an ion?

23. A double displacement reaction occurs when
    (a) one element is swapped between ions.
    (b) two elements are swapped between ions.
    (c) a physical change occurs.
    (d) two reactions are needed to make something.

24. Prefixes are only used for compounds containing:
    (a) a metal and non-metal
    (b) a metal and metal
    (c) a non-metal and a metal
    (d) a non-metal and non-metal

25. The products of all neutralization reactions are:
    (a) two elements
    (b) one compound and one element
    (c) water and a salt
    (d) water and NaCl

26. What type of solution has a high concentration of OH^{-1} ions and turns litmus paper blue?
    (a) H+ ions
    (b) silver nitrate
    (c) base
    (d) acid

27. When forming ionic compounds, which of the following is true about the overall charge?
    (a) it must be 0
    (b) it must be above 1
    (c) it must be below 1
    (d) none of the above

28. What type of reaction is occurring in this reaction?
    $NaCl \rightarrow Na + Cl_2$
    (a) Combustion
    (b) Synthesis
    (c) Decomposition
    (d) single displacement

29. Which is true of the following equation:
    $Na + Cl_2 \rightarrow NaCl$
    (a) Na and Cl are products
    (b) bNaCl is a reactant
    (c) Na and NaCl are products
    (d) Na and Cl are reactants

30. The pH of four liquids was measured. Which one would be considered neutral?
    (a) 3
    (b) 8
    (c) 9
    (d) 7

COMMUNICATION 15 Marks

Short Answers

31. State whether each of the following is either: Synthesis, Decomposition, Single Displacement, or Double Displacement. 5 Marks

a) $Mg_{(s)} + O_{2(g)} \rightarrow MgO_{(s)}$

b) $NH_4NO_{3(s)} \rightarrow 2H_2O_{(g)} + N_2O_{(g)}$

c) $Fe_{(s)} + CuSO_{4(aq)} \rightarrow FeSO_{4(aq)} + Cu_{(s)}$

d) $HCl_{(aq)} + NaOH_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)}$

e) $Ba(NO_3)_{2(aq)} + Na_2SO_{4(aq)} \rightarrow BaSO_{4(s)} + 2NaNO_{3(aq)}$

32. Correctly name the following compounds. 5 Marks

a) Co_2O_3

b) SO_2

c) $Pb(OH)_2$

d) $Fe_2(CO_3)_3$

e) $Al(HCO_3)_3$

33. Write the correct formula for the following compounds. 5 Marks

a) Sodium sulphate

b) Copper (II) hydroxide

c) Tin (II) oxide

d) Silver nitrate

e) Carbon tetrachloride

APPLICATION 15 Marks

34. Fill in the following chart **5 Marks**

	Acids	Bases
Important Ion Produced When Dissolved		
pH range		
Corrosive? (y/n)		
React with metals to form H_2? (y/n)		
Litmus Paper (red / blue)		

35. 4 g of hydrogen gas was reacted with 16 g of oxygen gas. This reaction produced water. **5 Marks**

a) Write the word equation for this reaction. 1 Mark

b) Write a balanced chemical equation for this reaction. 2 Marks

c) What would be the expected mass of water produced? 1 Mark

d) What physical law did you use to determine the mass of water produced? 1 Mark

36. You react 63.5 g of copper metal with a solution containing 339.8 g of silver nitrate. The products of this reaction are silver metal and copper (II) nitrate, which remains in solution. **5 Marks**

a) Write a word equation for this reaction. 1 Marks

b) Write a balanced chemical equation for this reaction. 3 Marks

c) If 223 g of copper (II) nitrate is produced, how much silver metal would you expect to be produced? 1 Mark

INQUIRY 20 Marks

37. Balance the following equations (if required): 12 Marks

a) $MgCl_2 + Ca(OH)_2 \rightarrow Mg(OH)_2 + CaCl_2$

b) $CH_4 + O_2 \rightarrow CO_2 + H_2O$

c) $Na + B_2S_3 \rightarrow Na_2S + B$

d) $H_2 + O_2 \rightarrow H_2O$

e) $Ag_2CO_{3(s)} \rightarrow Ag_2O_{(s)} + CO_{2(g)}$

f) $NaHCO_3 \rightarrow Na_2CO_3 + H_2O + CO_2$

38. Write the word equations below and then balance: 8 Marks

a) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride. 4 Marks

b) Zinc and lead (III) nitrate to form zinc nitrate and lead. 4 Marks

The Periodic Table of the Elements

1 **H** Hydrogen 1.00794																	2 **He** Helium 4.003
3 **Li** Lithium 6.941	4 **Be** Beryllium 9.012182											5 **B** Boron 10.811	6 **C** Carbon 12.0107	7 **N** Nitrogen 14.00674	8 **O** Oxygen 15.9994	9 **F** Fluorine 18.9984032	10 **Ne** Neon 20.1797
11 **Na** Sodium 22.989770	12 **Mg** Magnesium 24.3050											13 **Al** Aluminum 26.981538	14 **Si** Silicon 28.0855	15 **P** Phosphorus 30.973761	16 **S** Sulfur 32.066	17 **Cl** Chlorine 35.4527	18 **Ar** Argon 39.948
19 **K** Potassium 39.0983	20 **Ca** Calcium 40.078	21 **Sc** Scandium 44.955910	22 **Ti** Titanium 47.867	23 **V** Vanadium 50.9415	24 **Cr** Chromium 51.9961	25 **Mn** Manganese 54.938049	26 **Fe** Iron 55.845	27 **Co** Cobalt 58.933200	28 **Ni** Nickel 58.6934	29 **Cu** Copper 63.546	30 **Zn** Zinc 65.39	31 **Ga** Gallium 69.723	32 **Ge** Germanium 72.61	33 **As** Arsenic 74.92160	34 **Se** Selenium 78.96	35 **Br** Bromine 79.904	36 **Kr** Krypton 83.80
37 **Rb** Rubidium 85.4678	38 **Sr** Strontium 87.62	39 **Y** Yttrium 88.90585	40 **Zr** Zirconium 91.224	41 **Nb** Niobium 92.90638	42 **Mo** Molybdenum 95.94	43 **Tc** Technetium (98)	44 **Ru** Ruthenium 101.07	45 **Rh** Rhodium 102.90550	46 **Pd** Palladium 106.42	47 **Ag** Silver 107.8682	48 **Cd** Cadmium 112.411	49 **In** Indium 114.818	50 **Sn** Tin 118.710	51 **Sb** Antimony 121.760	52 **Te** Tellurium 127.60	53 **I** Iodine 126.90447	54 **Xe** Xenon 131.29
55 **Cs** Cesium 132.90545	56 **Ba** Barium 137.327	57 **La** Lanthanum 138.9055	72 **Hf** Hafnium 178.49	73 **Ta** Tantalum 180.9479	74 **W** Tungsten 183.84	75 **Re** Rhenium 186.207	76 **Os** Osmium 190.23	77 **Ir** Iridium 192.217	78 **Pt** Platinum 195.078	79 **Au** Gold 196.96655	80 **Hg** Mercury 200.59	81 **Tl** Thallium 204.3833	82 **Pb** Lead 207.2	83 **Bi** Bismuth 208.98038	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 (263)	107 **Bh** Bohrium (262)	108 **Hs** Hassium (265)	109 **Mt** Meitnerium (266)	110 (269)	111 (272)	112 (277)	113	114				

58 **Ce** Cerium 140.116	59 **Pr** Praseodymium 140.90765	60 **Nd** Neodymium 144.24	61 **Pm** Promethium (145)	62 **Sm** Samarium 150.36	63 **Eu** Europium 151.964	64 **Gd** Gadolinium 157.25	65 **Tb** Terbium 158.92534	66 **Dy** Dysprosium 162.50	67 **Ho** Holmium 164.93032	68 **Er** Erbium 167.26	69 **Tm** Thulium 168.93421	70 **Yb** Ytterbium 173.04	71 **Lu** Lutetium 174.967
90 **Th** Thorium 232.0381	91 **Pa** Protactinium 231.03588	92 **U** Uranium 238.0289	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)

1995 IUPAC masses and Approved Names from http://www.chem.qmw.ac.uk/iupac/AtWt/
masses for 107-111 from C&EN, March 13, 1995, p. 35
112 from http://www.gsi.de/z112e.html