Parent/Guardian : Signature

Wednesday, March 20th, 2013 Name: Uni Lee

SNC2D : Chemistry Test

Knowledge/Understanding	Communication	Thinking/Investigation	Application
15 / 20	18 / 20	9.5 / 12	19 / 22

Part A: Multiple Choice [20 marks]

Circle the BEST answer and shade it on the SCANTRON card.

1. Which of the following elements forms a **cation**?
   a) nitrogen
   b) sulfur
   c) boron
   d) oxygen
   e) fluorine

2. Which observation provides information about the **chemical properties** of a substance?
   a) it is a liquid at 25°C
   b) it has a density of 2.50g/cm^3
   c) it reacts with oxygen
   d) it will not dissolve in water

3. Which of the following is NOT **evidence** of a **chemical change**?
   a) Sound is released
   b) Heat is absorbed
   c) A precipitate forms
   d) A liquid evaporates into gas
   e) Smoke is produced

4. Which is a diagram for an O^{2-} ion?

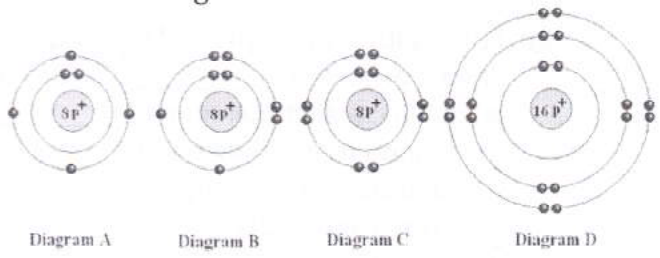


Diagram A Diagram B Diagram C Diagram D

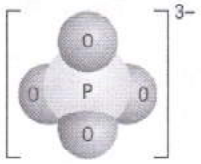
   a) Diagram A
   b) Diagram B
   c) Diagram C
   d) Diagram D

5. Which would have the same number of electrons as Cl^{1-}?
   a) Mg^{2+}
   b) F^{1-}
   c) Si
   d) P^{3-}
   e) S

6. Element X has one electron in its outer orbit and element Y has six electrons in its outer orbit. What is the correct formula for the compound formed by X and Y?
   a) XY
   b) XY_6
   c) XY_2
   d) X_2Y
   e) X_6Y

7. What is the correctchemical formula for the compound **tin (IV) oxide**?
   a) Sn_2O_4
   b) SnO
   c) Sn_4O_2
   d) SnO_2
   e) Sn_2O

8. This diagram best represents a(n):



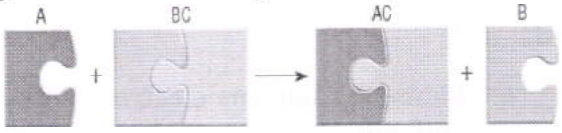
   a) polyatomic ion
   b) molecule
   c) ionic compound
   d) none of the above

9. What is the correct **name** for the compound NH_4NO_3?
   a) tetrahydrogendinitrogen trioxide
   b) ammonium nitride
   c) ammonium nitrate
   d) dinitrogenhydronitrate

10. Which of the following is NOT a **diatomic element**?
    a) nitrogen
    b) carbon
    c) bromine
    d) hydrogen
    e) chlorine

11. Which of the following is NOT an example of a **molecular compound**?
    a) Methane gas
    b) PCl_5
    c) Carbon dioxide
    d) N_2O_4
    e) NaF

12. What type of chemical reaction does this general chemical equation represent?

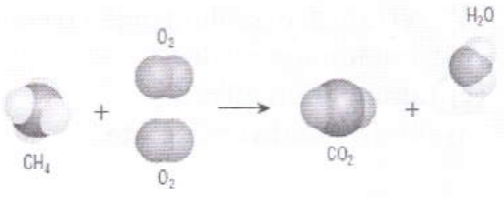


    a) Synthesis
    b) Singledisplacement
    c) Double displacement
    d) Decomposition
    e) Combustion

13. The word "**energy**" will be included on the left side of a chemical equation in a reaction that
    a) absorbs energy
    b) is exothermic
    c) releases energy
    d) gives off light
    e) involves combustion

14. What would be the **products** of the following reaction: **Zn + NaCl→**
    a) $ZnCl_2$ + Na
    b) ZnCl + Na
    c) ZnNa + Cl_2
    d) $ZnCl_2$ + Ni
    e) No reaction would occur

15. What would you do to **balance** the equation?



    a) Add another water to the right side
    b) Add another carbon dioxide to the right side
    c) Add another oxygen to the left side
    d) Add 2 carbon dioxides to the right side
    e) Leave it alone, it's balanced!

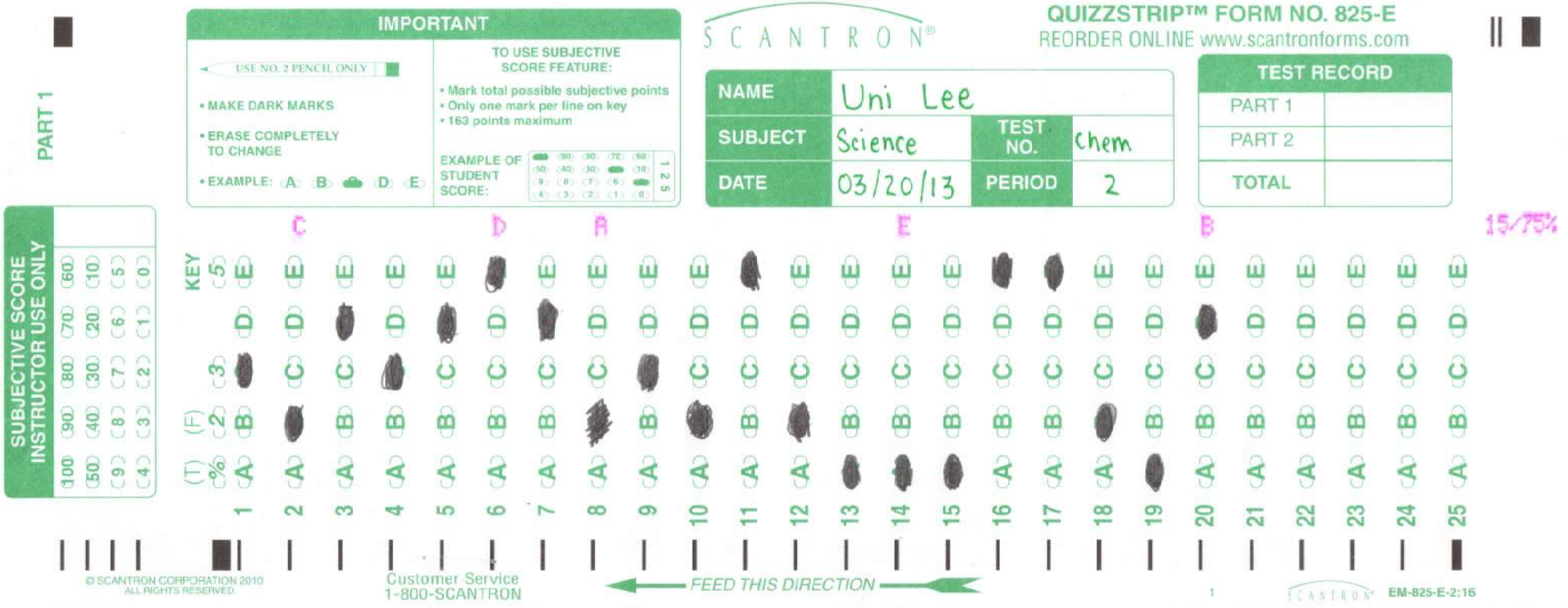
16. Which of the following is NOT a product of an **incomplete combustion** reaction:
    a) Carbon dioxide gas
    b) Water
    c) Carbon monoxide gas
    d) Carbon soot
    e) Oxygen gas

17. Which of the following is an example of **preventing** metal from **corroding**?
    a) Keeping metal away from water
    b) Applying paint
    c) Galvanized steel
    d) Applying a plastic coating
    e) All of the above are strategies to prevent corrosion

18. Which of the following is **NOT** a **source** of **acid precipitation**?
    a) sulfur dioxide
    b) carbon dioxide
    c) NO_2
    d) Combustion of fossil fuels
    e) smog

19. Which of the following is a **base**?
    a) NH_4OH
    b) Na_3P
    c) HOH
    d) H_2S
    e) LiH

20. Lemon juice has a pH of 2.0 and tomatoes have a pH of 4.0. _____ is/are more acidic because it has more _____ ions.
    a) Lemon juice, hydroxide
    b) Lemon juice, hydrogen
    c) Tomatoes, hydroxide
    d) Tomatoes, hydrogen
    e) Tomatoes, oxygen


PART 1
IMPORTANT
USE NO. 2 PENCIL ONLY
• MAKE DARK MARKS
• ERASE COMPLETELY TO CHANGE
• EXAMPLE: A B D E
TO USE SUBJECTIVE SCORE FEATURE:
• Mark total possible subjective points
• Only one mark per line on key
• 163 points maximum
EXAMPLE OF STUDENT SCORE:
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SUBJECT Science
TEST NO. Chem
DATE 03/20/13
PERIOD 2
TEST RECORD
PART 1
PART 2
TOTAL
15/75%
SUBJECTIVE SCORE INSTRUCTOR USE ONLY
KEY
(T) (F) %
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Part B: Communication[20 marks]

1. Name the following Compounds: **[8 marks]**

FeI_3	iron (III) iodide ✓	$H_2CrO_{4(aq)}$	chromic acid ✓
P_2O_5	diphosphorus pentoxide ✓	SF_4	sulphur tetrafluoride ✓
$N_{2(g)}$	Nitrogen gas ✓	K_3PO_4	potassium phosphate ✓
H_2S	dihydrogen monosulfide ✗	$AsBr_3$	arsenic (III) bromide ✓

7

2. Write the chemical formulas for the following compounds: **[8 marks]**

$PbSO_4$ ✓	**lead (II) sulfate**	SO_3 ✓	**sulfur trioxide**
$HI_{(aq)}$ ✓	**hydroiodic acid**	Zn_2C ✓	**zinc carbide**
$Al(ClO_3)_3$ ✓	**aluminum chlorate**	CCl_4 ✓	**carbon tetrachloride**
$Ca(NO_3)_2$ ✓	**calcium nitrate**	$HCH_3COO_{(aq)}$ ✓	**acetic acid**

7

3. **CHOOSE 1** of the options below and use the chart to compare them:

   OPTIONS: **Acids vs. Bases OR Ionic Compounds vs. Molecular Compounds**

   List the 4 properties or characteristics being compared and list these properties or characteristics for each term. **[4 marks]**

Characteristic or Property being compared	Acids	Bases
taste	sour	bitter ✓
conducts electricity	Yes	Yes ✓
corrosive	Yes	Yes ✓
dissolves in water	Yes	Yes ✓

4

18

Part C: Thinking and Inquiry [12 marks]

1. In class, a student burned 5g of magnesium and obtained 5.7 g of a white powdered product.

   a) Write the skeleton equation for the chemical reaction. **[1 mark]**

   ~~magnesium~~ + ~~oxygen~~ → ~~magnesium oxide~~

   $Mg + O_2 \longrightarrow MgO$ ✓ 1

   b) Ifthe student concluded that the law of conservation of mass did not apply to this chemical reaction. Is the student correct or incorrect? Justify your answer by referring to law of conservation of mass. **[3 marks]**

   the student is incorrect. You don't know if anything in the air joined in and is in the weight. the law of conservation of mass applies to everything. ~~mass~~ the 0.7g of matter wasn't created. it was just rearranged 1.5

   where did it come from?

2. A chemical truck carrying barrels of concentrated sulfuric acid crashed causing the acid to spill on the highway and into the surrounding ecosystem.

   a) **List** 1 impact this spill could have on the surrounding ecosystem? **[1 mark]**

   It would spill into the lake and kill the fish 0.5

   how?

   b) Describe a method you could use to clean up the spill and explain how it works. **[2marks]**

   Add some base into the lake. like limestone ✓/X

   then, it would be neutral again 1.5

   c) Suggest one way you could safely test that your method has now made the area free of the sulfuric acid.**[1 mark]**

   scoop up a bit of lake water and test it with ✓ 1

   universal indicator.

5.5

3. **Write** the **word equation** and **skeleton equation** for the following reaction: **[4 marks]**

When you open a bottle of pop, you release the pressure inside the bottle. This causes some of the carbonic acid in the pop to undergo a decomposition reaction turning into bubbles of carbon dioxide gas and liquid water.

Word Equation: carbonic acid ⟶ carbon dioxide + dihydrogen monoxide

Skeleton Equation: $H_2CO_3(aq) \longrightarrow CO_2(g) + H_2O(\ell)$ ✓

4.

Part D: Application [22 marks]

1. Balance the following reactions and indicate the type of reaction: **[16 marks]**

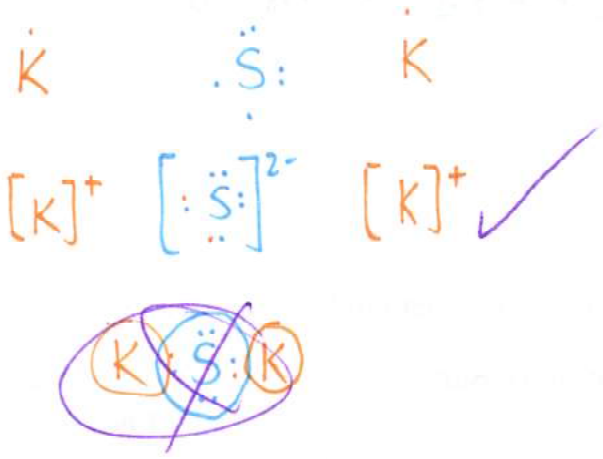
For balancing, be sure to write a "1" where necessary. [1 mark each]	**Type of reaction [1 mark each]**
a) 2 Na + 1 Cl_2 → 2 NaCl ✓	synthesis ✓
b) 2 $AlBr_3$ + 3 K_2SO_4 → 6 KBr + ~~2~~ $Al_2(SO_4)_3$	double displacement ✓
c) 2 $KClO_3$ → 2 KCl + 3 O_2 ✓	decomposition ✓
d) 2 C_4H_{10} + 18 O_2 → 4 CO_2 + ~~10~~ H_2O	combustion ✓
e) 2 Fe + 3 Cu_2SO_4 → 1 $Fe_2(SO_4)_3$ + 6 Cu ✓	single displacement ✓
f) 1 P_4O_{10} + 6 H_2O → 4 H_3PO_4 ✓	synthesis ✓
g) 3 H_2S + 2 $AsCl_3$ → 1 As_2S_3 + 6 HCl ✓	double displacement ✓
h) 2 $CaCO_3$ → 2 CO_2 + 2 CaO reduce - 0.5	decomposition ✓

13.5

13, 5

2. Draw the **Lewis dot diagrams** for the following elements and show how the compounds form between them. Name the compound and write the chemical formula. **[6 marks]**

a) **potassium** and **sulfur**



Final Diagram

no sharing

2.5

Chemical Name: potassium sulfide

Chemical Formula: K_2S

b) **nitrogen** and **nitrogen**

Final Diagram

Chemical Name: Nitrogen gas

Chemical Formula: N_2

3

THE END!

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