Deep Run High School

CHEMISTRY I: 3(A), 5(A), 7(A)

Unit 5 Test Review - Ions and Chemical Bonding

Due Date: **December 17, 2019**

Instructors: **Jennifer Krug, Mr. Wilson, Mrs. Tique**

ID: **5141**

Name: _____ Score: / 100

Instructions:

You will have **two attempts** to get your highest score.

Question 1

Match the appropriate oxidation number to each ion.

☐	1. lithium ion	A.	-2
☐	2. calcium ion	B.	-1
☐	3. nitride ion	C.	-3
☐	4. sulfide ion	D.	+2
☐	5. chloride ion	E.	+4
☐	6. silver ion	F.	+3
		G.	+1
		H.	-4

Name: _____

Question 2

Choose the correct name for: PbO

- ☐ lead III oxide
- ☐ lead II oxide
- ☐ lead I oxide
- ☐ lead IV oxide

Question 3

An isotope of boron has a mass number of 11 and 5 protons. How many neutrons are in the nucleus? _____

Question 4

Choose the correct formula for: ammonium oxide

- ☐ NH_4O
- ☐ Am_2O
- ☐ AmO
- ☐ $(NH_4)_2O$

Name: _____

Question 5

Choose the correct formula for: dinitrogen tetrachloride

- ☐ N_2C_4
- ☐ N_2Cl_4
- ☐ $2\ NCl_4$
- ☐ $4\ N_2Cl$

Question 6

The isotope shown below has

$$^{31}_{15}P^{-3}$$

- ☐ 15 protons, 15 neutrons, and 18 electrons
- ☐ 17 protons, 16 neutrons, and 20 electrons
- ☐ 15 protons, 16 neutrons, and 18 electrons
- ☐ 15 protons, 31 neutrons, and 12 electrons

Name: _____

Question 7

Choose the correct name for: $Ca(OH)_2$

- ☐ calcium oxalate
- ☐ calcium oxide
- ☐ calcium hydroxide
- ☐ calcium peroxide

Question 8

Choose the correct formula for: titanium III phosphate

- ☐ Ti_3P
- ☐ Ti_3PO_4
- ☐ $TiPO_4$
- ☐ TiP

Name: _____

Question 9

The _____ states that each orbital can hold two electrons and they must have opposite spins.

- ☐ Hund's Rule
- ☐ Pauli Exclusion Principle
- ☐ Heisenberg Uncertainty Principle
- ☐ Aufbau Principle

Question 10

Choose the correct name for: Na_3P

- ☐ sodium phosphide
- ☐ sodium phosphate
- ☐ trisodium phosphate
- ☐ sodium phoshporus

Name: _____

Question 11

Choose the correct name for: $FeCO_3$

- ☐ iron III carbonate
- ☐ iron carbonide
- ☐ iron carbonate
- ☐ iron II carbonate

Question 12

Choose the correct name for: Cu_2S

- ☐ copper sulfide
- ☐ copper I sulfide
- ☐ copper II sulfide
- ☐ dicopper sulfide

Name: _____

Question 13

Choose the correct formula for: sodium sulfide

- ☐ Na_2SO_4
- ☐ $NaSO_4$
- ☐ Na_2S
- ☐ NaS_2

Question 14

Choose the correct formula for: methane

- ☐ SO_2
- ☐ NH_3
- ☐ CH_4
- ☐ MnO

Name: _____

Question 15

What is the correct electron configuration for a arsenic atom?

- ☐ $1s^2\ 2s^2\ 3s^2\ 2p^6\ 3p^6\ 4s^2\ 4d^{10}\ 4p^6$
- ☐ $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^2\ 4p^3$
- ☐ $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^3$
- ☐ $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 4p^3$

Question 16

Choose the correct formula for: oxygen gas

- ☐ O^{-2}
- ☐ O_2
- ☐ O
- ☐ O_3

Name: _____

Question 17

Choose the correct name for: $AuNO_3$

- ☐ gold I nitrogenate
- ☐ gold III nitrate
- ☐ gold I nitrate
- ☐ gold III nitrogenate

Question 18

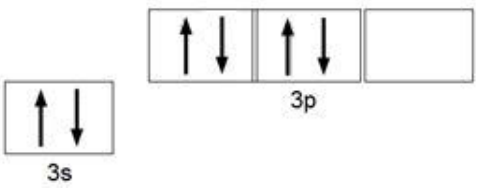
The atomic number of an isotope is equal to the number of ___ inside the atom?

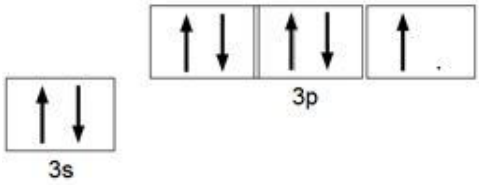
- ☐ neutrons
- ☐ orbitals
- ☐ protons
- ☐ electrons

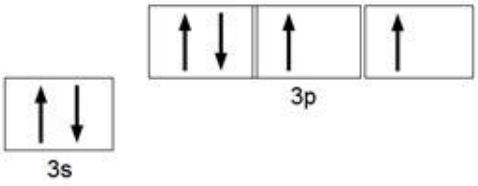
Name: _____

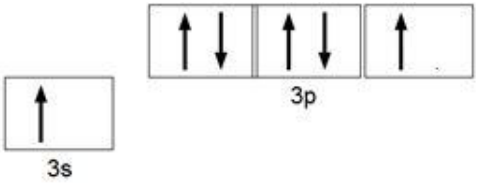
Question 19

Which of the following correctly shows the third energy level of the Aufbau Diagram for Chlorine?

☐ 

☐ 

☐ 

☐ 

Name: _____

Question 20

Ionic bonding occurs when

- ☐ a metal atom transfers an electron to a nonmetal atom
- ☐ a metal atom and a nonmetal atom share electrons
- ☐ two nonmetal atoms share valence electrons
- ☐ a nonmetal atom transfers an electron to another nonmetal atom

Question 21

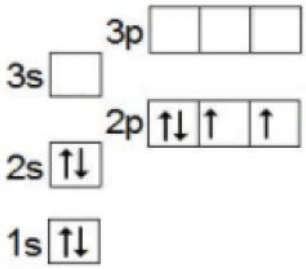
Choose the correct formula for: lead IV phosphate

- ☐ $Pb_3(PO_4)_4$
- ☐ $Pb_2(PO_3)_4$
- ☐ $Pb_4(PO_4)_3$
- ☐ $Pb(PO_4)_4$

Name: _____

Question 22

Which element has the following Aufbau electron configuration?



- ☐ oxygen
- ☐ nitrogen
- ☐ fluorine
- ☐ sulfur

Name: _____

Question 23

Match the appropriate oxidation number to each polyatomic ion.

1. OH
2. NO_3
3. NH_4
4. SO_4
5. PO_4
6. CO_3

A. -1
B. -2
C. +2
D. -3
E. +1
F. +3

Question 24

Which of the following statements is correct about the structure of an atom?

- Neutrons orbit the nucleus of the atom in different orbitals.
- Electrons are 2000 times smaller than protons.
- The nucleus is mostly empty space.
- Protons and neutrons are the smallest subatomic particles.

Name: _____

Question 25

Choose the correct formula for: strontium nitrate

- ☐ $Sr_2(NO_3)$
- ☐ $SrNO_3$
- ☐ SrN_3
- ☐ $Sr(NO_3)_2$

Question 26

Choose the correct name for: NH_3

- ☐ methane
- ☐ ammonium
- ☐ ammonia
- ☐ nitrate

Name: _____

Question 27

Choose the correct formula for: chromium III oxide

- ☐ Cr_2O_3
- ☐ Cr_3O_2
- ☐ Cr_3O
- ☐ CrO_3

Question 28

Chose the correct name for: N_2O

- ☐ nitrogen II oxide
- ☐ mononitrogen dioxide
- ☐ dinitrogen monoxide
- ☐ nitrogen II oxate

Name: _____

Question 29

Choose the correct formula for: zinc phosphide

- ☐ Zn_3P
- ☐ Zn_2P
- ☐ ZnP_3
- ☐ Zn_3P_2

Question 30

Choose the correct name for: N_2

- ☐ nitride
- ☐ dinitrogen gas
- ☐ nitrogen gas
- ☐ nitrate

Name: _____

Question 31

Choose the correct name for: Ag_2SO_4

- ☐ argon sulfide
- ☐ silver sulfate
- ☐ silver sulfide
- ☐ argon sulfate

Question 32

An element in the Halogen Group will have ___ valence electrons.

- ☐ 18
- ☐ 17
- ☐ 1
- ☐ 7

Name: _____

Question 33

Which of the following represents a particle containing 8 protons, 9 neutrons and 7 electrons?

- ☐ $^{17}_{7}N^{+1}$
- ☐ $^{15}_{9}F^{-1}$
- ☐ $^{17}_{8}O^{-1}$
- ☐ $^{16}_{8}O$
- ☐ $^{17}_{8}O^{+1}$

Question 34

How many atoms are in the formula for ammonium oxide?

- ☐ 10
- ☐ 11
- ☐ 12
- ☐ 8

Name: _____

Question 35

Which of the following elements has an electron configuration of:

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$

- ☐ P
- ☐ Cl
- ☐ Br
- ☐ S

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Instructions for grading: Grade each question and tally the score to obtain the total test points. If the factor does not equal 1, multiply the total points by the factor to obtain the student's final score.

Question 1

Match the appropriate oxidation number to each ion.

G 1. lithium ion

D 2. calcium ion

C 3. nitride ion

A 4. sulfide ion

B 5. chloride ion

F 6. silver ion

6 possible pts. / partial credit

Question 2

Choose the correct name for: PbO

☑ lead II oxide

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 3

An isotope of boron has a mass number of 11 and 5 protons. How many neutrons are in the nucleus? 6

1 possible pts.

Question 4

Choose the correct formula for: ammonium oxide

☑ $(NH_4)_2O$

1 possible pts.

Question 5

Choose the correct formula for: dinitrogen tetrachloride

☑ N_2Cl_4

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 6

The isotope shown below has

$$^{31}_{15}P^{-3}$$

☑ 15 protons, 16 neutrons, and 18 electrons

1 possible pts.

Question 7

Choose the correct name for: $Ca(OH)_2$

☑ calcium hydroxide

1 possible pts.

Question 8

Choose the correct formula for: titanium III phosphate

☑ $TiPO_4$

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 9

The _____ states that each orbital can hold two electrons and they must have opposite spins.

☑ Pauli Exclusion Principle

1 possible pts.

Question 10

Choose the correct name for: Na_3P

☑ sodium phosphide

1 possible pts.

Question 11

Choose the correct name for: $FeCO_3$

☑ iron II carbonate

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 12

Choose the correct name for: Cu_2S

☑ copper I sulfide

1 possible pts.

Question 13

Choose the correct formula for: sodium sulfide

☑ Na_2S

1 possible pts.

Question 14

Choose the correct formula for: methane

☑ CH_4

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 15

What is the correct electron configuration for a arsenic atom?

☑ $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^3$

1 possible pts.

Question 16

Choose the correct formula for: oxygen gas

☑ O_2

1 possible pts.

Question 17

Choose the correct name for: $AuNO_3$

☑ gold I nitrate

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 18

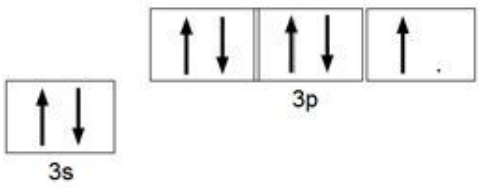
The atomic number of an isotope is equal to the number of ___ inside the atom?

☑ protons

1 possible pts.

Question 19

Which of the following correctly shows the third energy level of the Aufbau Diagram for Chlorine?

☑ 

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 20

Ionic bonding occurs when

☑ a metal atom transfers an electron to a nonmetal atom

1 possible pts.

Question 21

Choose the correct formula for: lead IV phosphate

☑ $Pb_3(PO_4)_4$

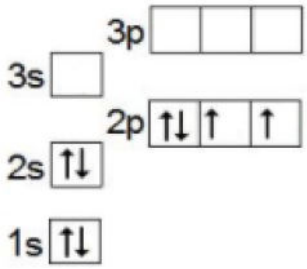
1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 22

Which element has the following Aufbau electron configuration?



☑ oxygen

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 23

Match the appropriate oxidation number to each polyatomic ion.

A 1. OH

E 2. NO_3

B 3. NH_4

D 4. SO_4

C 5. PO_4

F 6. CO_3

6 possible pts. / partial credit

Question 24

Which of the following statements is correct about the structure of an atom?

☑ Electrons are 2000 times smaller than protons.

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 25

Choose the correct formula for: strontium nitrate

☑ $Sr(NO_3)_2$

1 possible pts.

Question 26

Choose the correct name for: NH_3

☑ ammonia

1 possible pts.

Question 27

Choose the correct formula for: chromium III oxide

☑ Cr_2O_3

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 28

Chose the correct name for: N_2O

☑ dinitrogen monoxide

1 possible pts.

Question 29

Choose the correct formula for: zinc phosphide

☑ Zn_3P_2

1 possible pts.

Question 30

Choose the correct name for: N_2

☑ nitrogen gas

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 31

Choose the correct name for: Ag_2SO_4

☑ silver sulfate

1 possible pts.

Question 32

An element in the Halogen Group will have ___ valence electrons.

☑ 7

1 possible pts.

Question 33

Which of the following represents a particle containing 8 protons, 9 neutrons and 7 electrons?

☑ $^{17}_{8}O^{+1}$

1 possible pts.

Answer Key

Possible Points: 45 Factor: x2.22 Test Value: 100

Question 34

How many atoms are in the formula for ammonium oxide?

☑ 11

1 possible pts.

Question 35

Which of the following elements has an electron configuration of:

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$

☑ S

1 possible pts.