

Deep Run High School

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

Unit 6 Test

Due Date: January 27, 2020

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

ID: 9277

Name: _____

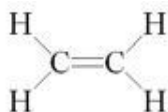
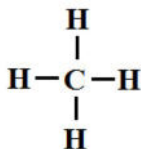
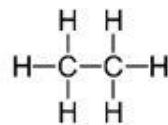
Score:

/ 100

Question 1

/1

Which of the following is the proper molecular structure for ethene?

☐☐☐☐

Question 2

/1

Which type of intermolecular force exhibits the most polar bonds?

☐

Dipole - dipole interactions

☐

Ion-Ion attractions

☐

London forces

☐

Hydrogen bonding

Name: _____

Question 3

/1

Which of the following compounds would exhibit the highest boiling point?

☐ PCl_3 ☐ H_2O ☐ Cl_2 ☐ NaCl

Question 4

/1

Choose the correct name for: $\text{Cu}_3(\text{PO}_4)_2$

☐ copper II phosphide☐ copper III phosphate☐ copper III phosphide☐ copper II phosphate

Name: _____

Question 5

 /1**Choose the correct name for: CuOH**

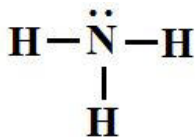
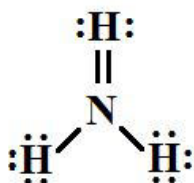
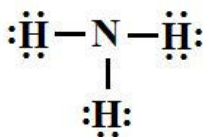
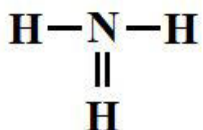
- ☐ copper I hydroxide
- ☐ copper I hydride
- ☐ copper I oxalate
- ☐ copper I peroxide

Name: _____

Question 6

/1

Which of the following is the correct Lewis Dot structure for ammonia?

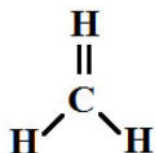
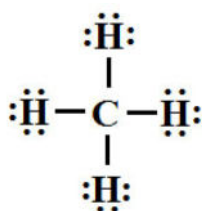
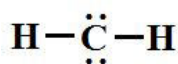
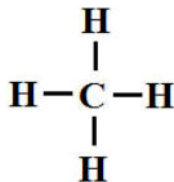
☐☐☐☐

Name: _____

Question 7

/1

Which of the following is the correct Lewis Dot structure for methane?

☐☐☐☐

Name: _____

Question 8

 /1Choose the correct name for: Ag_2S

- ☐ argon sulfide
- ☐ silver II sulfide
- ☐ argon II sulfide
- ☐ silver sulfide

Question 9

 /1Choose the correct name for: Na_3P

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

Name: _____

Question 10

/1

According to the electronegativity chart below, predict the polarity between a carbon atom and an oxygen atom.

Electronegativity Values of Some Atoms

2.1 H						
1.0 Li	1.5 Be	2.0 B	2.5 C	3.0 N	3.5 O	4.0 F
0.9 Na	1.2 Mg	1.5 Al	1.8 Si	2.1 P	2.5 S	3.0 Cl
0.8 K	1.0 Ca				2.4 Se	2.8 Br

- ☐ polar covalent
- ☐ nonpolar covalent
- ☐ nonpolar ionic
- ☐ ionic

Name: _____

Question 11

/1

All of the following molecules exhibit a trigonal planar structure
EXCEPT -

- ☐ PCl_3
- ☐ BCl_3
- ☐ NO_3^{-1}
- ☐ CO_3^{-2}

Question 12

/1

Which of the following atoms breaks the octet rule?

- ☐ Silicon
- ☐ Arsenic
- ☐ Boron
- ☐ Selenium

Name: _____

Question 13

 /1

Choose the correct formula for: methane

☐ SO_2 ☐ NH_3 ☐ MnO ☐ CH_4

Question 14

 /1

Choose the correct formula for: sulfur trioxide

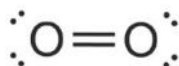
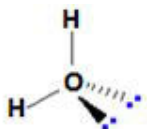
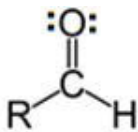
☐ SO_4 ☐ SO_3 ☐ 3SO_4 ☐ S_3O

Name: _____

Question 15

/1

Which of the following molecules exhibits London dispersion forces?

☐☐☐☐

Name: _____

Question 16

/1

Which of the following molecules would have the lowest boiling point?



Question 17

/1

All of the following possess a tetrahedral bond structure *EXCEPT* -



Name: _____

Question 18

/1

Which of the following molecules exhibits a tetrahedral structure?

- ☐ H_2O
- ☐ CH_3Cl
- ☐ CO_3^{-2}
- ☐ NH_3

Question 19

/1

Which of the following is the mathematical formula used to predict the pattern of an **alkyne**?

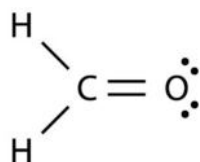
- ☐ $\text{C}_n \text{H}_{2n-2}$
- ☐ $\text{C}_n \text{H}_{2n}$
- ☐ $\text{C}_n \text{H}_{2n+2}$
- ☐ $\text{C}_n \text{H}_n$

Name: _____

Question 20

/1

The molecules in a sample of liquid formaldehyde, CH_2O , are attracted to each other by _____.



- ☐ dipole - dipole forces
- ☐ hydrogen bonding forces
- ☐ London dispersion forces
- ☐ ion - ion forces

Name: _____

Question 21

/1

Which of the following molecules exhibits a dipole - dipole interaction?

☐ CO_2 ☐ BF_3 ☐ CCl_4 ☐ PCl_3

Question 22

/1

Choose the correct name for: ICl_7

☐ iodide decachloride☐ iodine heptachloride☐ iodine chloride VII☐ iodine sevenchloride

Name: _____

Question 23

 /1**Choose the correct name for: CO_2**

- ☐ carbon monoxide
- ☐ carbon oxide II
- ☐ carbon dioxide
- ☐ carbonate

Question 24

 /1**Choose the correct name for: Cu_3P**

- ☐ copper I phosphate
- ☐ copper I phosphide
- ☐ copper III phosphide
- ☐ copper phosphide

Name: _____

Question 25

/1

Two atoms with an electronegativity difference of ____ will likely form a polar covalent bond.

☐ 2.30☐ 1.30☐ 3.30☐ 0.30

Question 26

/1

Choose the correct formula for: zinc hydroxide

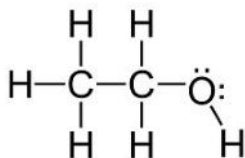
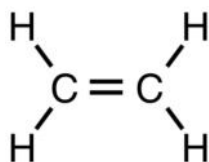
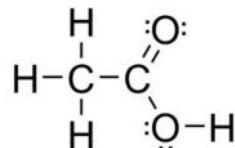
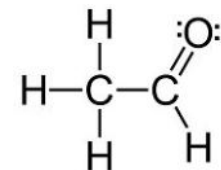
☐ Zn(OH)_2 ☐ ZnOH_2 ☐ Zn_2OH ☐ ZnOH

Name: _____

Question 27

/1

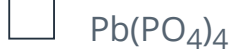
Which of the following molecules contains a carboxylic acid functional group?

☐☐☐☐

Name: _____

Question 28

/1

Choose the correct formula for: lead IV phosphate☐☐☐☐

Question 29

/1

Choose the correct formula for: nickel I phosphide☐☐☐☐

Name: _____

Question 30

/1

Predict the structure of a molecule that contains 3 single bonds and 1 lone pair on the central atom.

- ☐ pyramidal
- ☐ trigonal planar
- ☐ bent
- ☐ tetrahedral

Question 31

/1

What bond angles are present in a phosphorus trichloride molecule?

- ☐ 105°
- ☐ 107°
- ☐ 120°
- ☐ 109.5°

Name: _____

Question 32

/1

Choose the correct formula for: barium sulfide☐

BaS

☐Ba₂S₂☐Ba₂SO₄☐BaSO₂

Question 33

/1

How many sets of lone pair electrons are located on the central atom of a bent molecule?☐

3

☐

2

☐

4

☐

1

Name: _____

Question 34

 /1

What is the VSEPR shape of a dihydrogen selenide molecule?

- ☐ bent
- ☐ pyramidal
- ☐ linear
- ☐ tetrahedral

Question 35

 /1

Which of the following linear molecules possesses a triple bond?

- ☐ O₂
- ☐ N₂
- ☐ Cl₂
- ☐ CO₂

Name: _____

Question 36

/1

What is the bond angle of a carbon dioxide molecule?

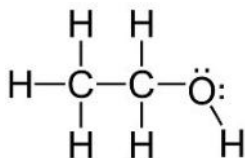
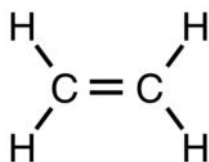
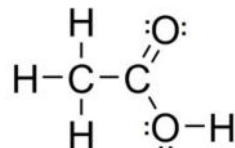
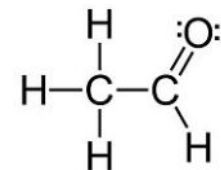
☐ 180° ☐ 120° ☐ 105° ☐ 90°

Name: _____

Question 37

/1

Which of the following molecules contains an aldehyde functional group?

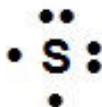
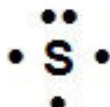
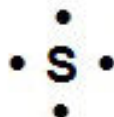
☐☐☐☐

Name: _____

Question 38

 /1

Which of the following is the correct Lewis Dot Structure for Sulfur?

☐☐☐☐

Name: _____

Question 39

 /1

Bromine has ___ valence electrons.

☐

17

☐

7

☐

4

☐

35

Question 40

 /1

All the following molecules exhibits hydrogen bonding *EXCEPT* -

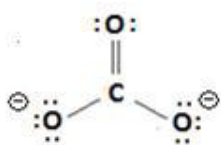
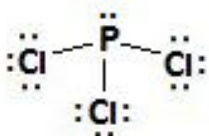
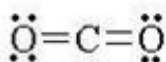
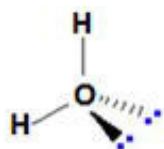
☐ H_2O ☐ NH_3 ☐ CH_4 ☐ HF

Name: _____

Question 41

/1

Which of the following molecules exhibits the strongest intermolecular forces?

☐☐☐☐

Name: _____

Question 42

 /1**Choose the correct name for: $\text{Ba}_3(\text{PO}_4)_2$**

- ☐ barium II phosphate
- ☐ barium II phosphide
- ☐ barium phosphate
- ☐ barium phosphide

Name: _____

Question 43

/1

Which of the following hydrocarbons will have the highest boiling point?

**Ethanol****Propanol****Butanol****Pentanol**

- ☐ butanol
- ☐ propanol
- ☐ pentanol
- ☐ ethanol

Name: _____

Question 44

/1

Which of the following substances is a petrochemical?

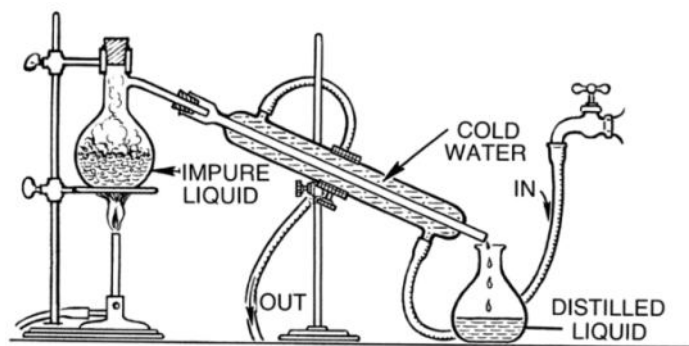
- ☐ insulin
- ☐ nucleic acid
- ☐ vitamin A
- ☐ octane

Name: _____

Question 45

/1

The following apparatus is used to separate liquids based on their _____.



- ☐ boiling points
- ☐ melting points
- ☐ densities
- ☐ molar masses

Name: _____

Question 46

/1

Which of the following is an example of a natural polymer?

☐ protein☐ nylon☐ plastic☐ Kevlar

Question 47

/1

Which of the following does **NOT** belong to the **alkane** group?

☐ C_1H_4 ☐ C_2H_2 ☐ C_4H_{10} ☐ C_3H_8

Name: _____

Question 48

/1

Sort the following chemicals from weakest to strongest based on intermolecular forces.

☐ O_2 ☐ CO_2 ☐ CaO ☐ CO

Question 49

/1

Sort the following chemicals from weakest to strongest based on intermolecular forces.

☐ BCl_3 ☐ HF ☐ NaF ☐ Cl_2

Name: _____

Question 50

/1

Covalent bonding uses _____ to indicate the number of atoms present in the molecule.

☐

superscripts

☐

Roman numerals

☐

suffixes

☐

Greek prefixes

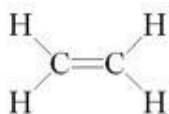
Answer Key

Possible Points: 50 Factor: x2.00 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

Which of the following is the proper molecular structure for ethene?



1 possible pts.

Question 2

Which type of intermolecular force exhibits the most polar bonds?



Ion-Ion attractions

1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 3

Which of the following compounds would exhibit the highest boiling point?



NaCl

1 possible pts.

Question 4

Choose the correct name for: $\text{Cu}_3(\text{PO}_4)_2$



copper II phosphate

1 possible pts.

Question 5

Choose the correct name for: CuOH



copper I hydroxide

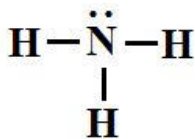
1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 6

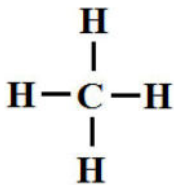
Which of the following is the correct Lewis Dot structure for ammonia?



1 possible pts.

Question 7

Which of the following is the correct Lewis Dot structure for methane?



1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 8

Choose the correct name for: Ag_2S 

silver sulfide

1 possible pts.

Question 9

Choose the correct name for: Na_3P 

sodium phosphide

1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 10

According to the electronegativity chart below, predict the polarity between a carbon atom and an oxygen atom.

Electronegativity Values of Some Atoms

2.1 H						
1.0 Li	1.5 Be	2.0 B	2.5 C	3.0 N	3.5 O	4.0 F
0.9 Na	1.2 Mg	1.5 Al	1.8 Si	2.1 P	2.5 S	3.0 Cl
0.8 K	1.0 Ca				2.4 Se	2.8 Br



polar covalent

1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 11

All of the following molecules exhibit a trigonal planar structure *EXCEPT* -

PCl₃

1 possible pts.

Question 12

Which of the following atoms breaks the octet rule?



Boron

1 possible pts.

Question 13

Choose the correct formula for: methane

CH₄

1 possible pts.

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Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 14

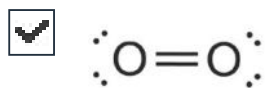
Choose the correct formula for: sulfur trioxide



1 possible pts.

Question 15

Which of the following molecules exhibits London dispersion forces?



1 possible pts.

Question 16

Which of the following molecules would have the lowest boiling point?



1 possible pts.

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Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 17

All of the following possess a tetrahedral bond structure *EXCEPT* -



1 possible pts.

Question 18

Which of the following molecules exhibits a tetrahedral structure?



1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 19

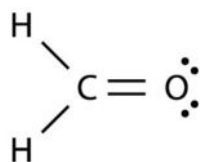
Which of the following is the mathematical formula used to predict the pattern of an **alkyne**?



1 possible pts.

Question 20

The molecules in a sample of liquid formaldehyde, CH_2O , are attracted to each other by _____.



dipole - dipole forces

1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 21

Which of the following molecules exhibits a dipole - dipole interaction?

 PCl_3

1 possible pts.

Question 22

Choose the correct name for: ICl_7



iodine heptachloride

1 possible pts.

Question 23

Choose the correct name for: CO_2



carbon dioxide

1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 24

Choose the correct name for: Cu_3P 

copper I phosphide

1 possible pts.

Question 25

Two atoms with an electronegativity difference of ____ will likely form a polar covalent bond.



1.30

1 possible pts.

Question 26

Choose the correct formula for: zinc hydroxide

 $\text{Zn}(\text{OH})_2$

1 possible pts.

ID: 9277

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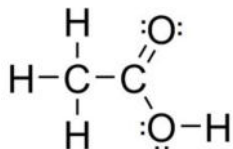
Page 11 of 21

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 27

Which of the following molecules contains a carboxylic acid functional group?



1 possible pts.

Question 28

Choose the correct formula for: lead IV phosphate



1 possible pts.

Question 29

Choose the correct formula for: nickel I phosphide



1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 30

Predict the structure of a molecule that contains 3 single bonds and 1 lone pair on the central atom.



pyramidal

1 possible pts.

Question 31

What bond angles are present in a phosphorus trichloride molecule?



107°

1 possible pts.

Question 32

Choose the correct formula for: barium sulfide



BaS

1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 33

How many sets of lone pair electrons are located on the central atom of a bent molecule?



2

1 possible pts.

Question 34

What is the VSEPR shape of a dihydrogen selenide molecule?



bent

1 possible pts.

Question 35

Which of the following linear molecules possesses a triple bond?

N₂

1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 36

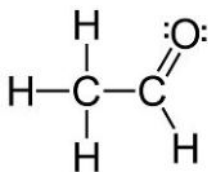
What is the bond angle of a carbon dioxide molecule?

 180°

1 possible pts.

Question 37

Which of the following molecules contains an aldehyde functional group?



1 possible pts.

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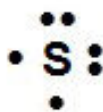
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Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 38

Which of the following is the correct Lewis Dot Structure for Sulfur?



1 possible pts.

Question 39

Bromine has ___ valence electrons.



7

1 possible pts.

Question 40

All the following molecules exhibits hydrogen bonding *EXCEPT* -

CH₄

1 possible pts.

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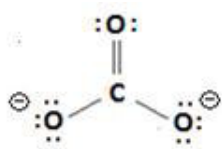
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Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 41

Which of the following molecules exhibits the strongest intermolecular forces?



1 possible pts.

Question 42

Choose the correct name for: $\text{Ba}_3(\text{PO}_4)_2$



barium phosphate

1 possible pts.

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Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 43

Which of the following hydrocarbons will have the highest boiling point?



Ethanol



Propanol



Butanol



Pentanol



pentanol

1 possible pts.

Question 44

Which of the following substances is a petrochemical?



octane

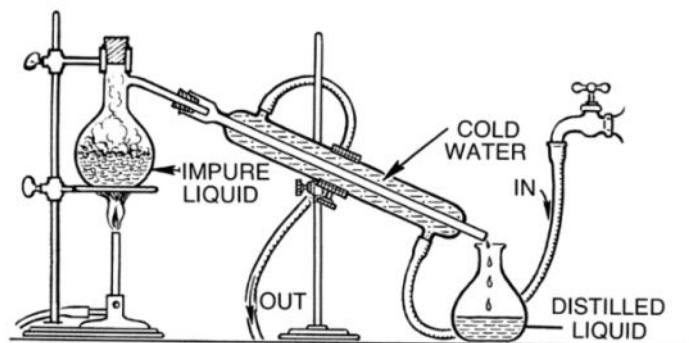
1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 45

The following apparatus is used to separate liquids based on their _____.



boiling points

1 possible pts.

Question 46

Which of the following is an example of a natural polymer?



protein

1 possible pts.

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Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 47

Which of the following does **NOT** belong to the **alkane** group?



1 possible pts. / partial credit

Question 48

Sort the following chemicals from weakest to strongest based on intermolecular forces.

1



2



4



3



1 possible pts.

Answer Key

Possible Points: 50 Factor: x2.00 Test Value: 100

Question 49

Sort the following chemicals from weakest to strongest based on intermolecular forces.

 BCl_3 HF NaF Cl_2

1 possible pts.

Question 50

Covalent bonding uses _____ to indicate the number of atoms present in the molecule.



Greek prefixes

1 possible pts.