Unit 2 Homework Questions

Properties of matter

1) Which of the following represents a physical property of oxygen?

a) Oxygen reacts with hydrogen to form water
b) Oxygen is slightly magnetic
c) Oxygen is released when an electrical current is passed though water
d) Oxygen supports combustion

2) **Which words best describe a pure sample of methane, CH_4?**
(select all that apply)

a) Substance
b) Heterogeneous
c) Compound
d) Mixture

Use the following laboratory procedures to answer the next three (3) questions:

a) Distillation
b) Chromatography
c) Filtration
d) Titration

3) Technique utilized to separate a mixture of ethanol and octane.

4) Technique utilized to separate a mixture of copper shot and water.

5) Technique utilized to separate a mixture of dyes in an ink.

The Periodic Table of Elements

1) Which element reacts explosively in water

a) Na
b) Mg
c) I
d) Xe

2) Elements that are known for their extreme chemical reactivity are

a) Nobel gasses
b) Halogens
c) Chalcogens
d) Alkaline earth metals

Use the following elements to answer the next three (3) questions

a) Potassium (K)
b) Fluorine (F)
c) Mercury (Hg)
d) Strontium (Sr)

3) Is classified as a transition metal

4) Is classified as an alkaline earth metal

5) Is classified as a halogen

Physical and Chemical Changes

1) All of the following are physical changes EXCEPT:

a) Fermenting
b) Cutting
c) Distilling
d) Melting

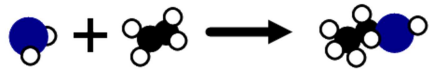
2) Which of the following is a chemical change?

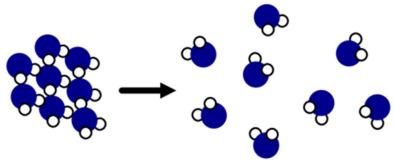
a) Dissolving salt in water
b) Hard-boiling an egg
c) Bending a wire
d) Tossing a salad

3) Which of the following is NOT a sign of a chemical change

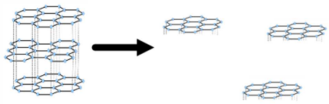
a) Production of light
b) Formation of a solid from a solution
c) Change in color
d) Reduction in size

4) Which particle sketch shows a chemical change?

a) 

b) 

c) 

d) 

5) When a candle burns it is a:

a) Physical change
b) Spiritual change
c) Chemical change
d) Mass change

History of the atom

1) Which scientist hypothesized that it would be impossible for two electrons to be in the same location with the same rotation at the same time?

a) Einstein
b) Heisenberg
c) Pauli
d) Schrodinger

Use the following scientists to answer the next four (4) questions

a) Millikan
b) Democritus
c) Rutherford
d) Dalton

2) Philosopher who credited with first coining the term atoms

3) Scientist who found the mass of the electron to be 1.6×10^{-19} mg

4) Scientist credited with the discovery of the nucleus

5) Scientist who shot alpha particles at gold foil, and thus disproved the plum-pudding model.

Atomic Structure

1) The Lithium-8 isotope contains:

a) 3 protons, 3 neutrons, 3 electrons
b) 3 protons, 5 neutrons, 3 electrons
c) 5 protons, 3 neutrons, 3 electrons
d) 8 protons, 3 neutrons, 3 electrons

2) An atom has a nuclear charge of 16 and a mass of 32 amu. The atom is:

a) Oxygen-32
b) Sulfur-16
c) Sulfur-32
d) Oxygen-16

3) An atom of Neon has a mass number of 21 amu. How many neutrons does it have?

a) 11
b) 10
c) 12
d) 21

4) Which of the following represent a particle containing 7 protons, 7 neutrons, and 10 electrons?

a) ^{14}O
b) $^{14}B^{3+}$
c) $^{12}N^{3+}$
d) $^{14}N^{3-}$

5) All of the same are isoelectronic (have the same number of electrons) as Ar EXCEPT:

a) S^{2-}
b) Cl^{1-}
c) Ca^{2+}
d) K^{2+}

Average Atomic Mass

1) Hydrogen has three known isotopes, given the average atomic mass of hydrogen (1.0018) what is most likely the most common form of hydrogen?

a) ^{4}H
b) ^{3}H
c) ^{2}H
d) ^{1}H

2) Element X has two stable isotopes, X-14 and X-12. If a sample of element X is 75% ^{12}X and 25% ^{14}X what is the average atomic mass of element X?

a) 13.00
b) 12.50
c) 12.00
d) 14.00

3) Carbon, whose average atomic mass is 12.01, has two known isotopes carbon-12 and carbon-14. What is the percent abundance of carbon-14?

a) 0.5%
b) 0.005%
c) 0.955%
d) 95.5%

4) Element Q has three isotopes, ^{14}Q, ^{15}Q and ^{17}Q whose atomic masses are 13.995amu, 15.0001amu and 16.981amu respectfully. If a sample of element Q is 42% ^{14}Q and 39%^{15}Q what is the average atomic mass of Q?

a) 14.954 amu
b) 15.333 amu
c) 11.728 amu
d) 19.00 amu

5) Average atomic masses for elements towards the end of the periodic table are given in parenthesis, for example Rutherfordium, Rf, has an average atomic mass of (261) amu. This is because:

a) There have been too few stable particles, for too short a span of time, of the element to accurately measure their exact mass and determine the average atomic mass
b) They are theoretical and therefore their neutron/proton ratio is only a hypothesis
c) They do not exist
d) The particles are so unstable that measuring their atomic masses is extraordinarily dangerous and therefore has never been done.

Nuclear Chemistry

1) **Which statement about the nucleus of an atom is CORRECT?**
(select all that apply)
   a) It is very dense
   b) It is positively charged
   c) It constitutes most of the volume of an atom
   d) It contains all of the protons and neutrons

2) Unstable nuclides generally have:
   a) More neutrons than protons
   b) More protons than electrons
   c) More electrons than neutrons
   d) More protons than neutrons

3) Element Z has a half-life of 8.00 minutes, how much of a 10.0g sample will remain after 40.00 minutes?
   a) 0.625 g
   b) 0.313 g
   c) 1.25 g
   d) 2.50 g

4) **Which of the following is the same for both a stable and unstable atom of uranium?**
(select all that apply)
   a) Mass number
   b) Atomic number
   c) Number of neutrons
   d) Half life

5) Complete the following nuclear equation
$^{214}Pb \rightarrow {}^{0}_{-1}\beta +$ _____
   a) ^{213}Ti
   b) ^{213}Bi
   c) ^{214}Ti
   d) ^{214}Bi

Unit 2 Lecture Homework

Name: _____

Properties of Matter

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ

Periodic Table

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ

Physical and Chemical Change

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ

History of the atom

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ

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Atomic Structure

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ

Average Atomic Mass

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ

Nuclear Chemistry

1. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ
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