

Random HW #7 — Fifteen Random Regents questions, word for word, Jan 2018

1 Which statement describes the location of protons and neutrons in an atom of helium?

1. Protons and neutrons are in the nucleus.
2. Protons and neutrons are outside the nucleus.
3. Protons are outside the nucleus, and neutrons are in the nucleus.
4. Protons are in the nucleus, and neutrons are outside the nucleus.

2 Given a list of atomic model descriptions:

A: electron shells outside a central nucleus

B: hard, indivisible sphere

C: mostly empty space

Which list of atomic model descriptions represents the order of historical development from the earliest to most recent?

1. A, B, C
2. A, C, B
3. B, C, A
4. B, A, C

3 Which list represents the classification of the elements nitrogen, neon, magnesium, and silicon, respectively?

1. metal, metalloid, nonmetal, noble gas
2. nonmetal, noble gas, metal, metalloid
3. nonmetal, metalloid, noble gas, metal
4. noble gas, metal, metalloid, nonmetal

4 In the ground state, all atoms of Group 15 elements have the same number of

1. valence electrons
2. electron shells
3. neutrons
4. protons

5 What is the chemical formula for ammonium sulfide?

1. $(\text{NH}_4)_2\text{S}$
2. $(\text{NH}_4)_2\text{SO}_3$
3. $(\text{NH}_4)_2\text{SO}_4$
4. $(\text{NH}_4)_2\text{S}_2\text{O}_3$

6 Which formula is an empirical formula?

1. N_2O_4
2. NH_3
3. C_3H_6
4. P_4O_{10}

7 Chemical properties can be used to

1. determine the temperature of a substance
2. determine the density of a substance
3. differentiate between two compounds
4. differentiate between two neutrons

8 Ice, $\text{H}_2\text{O}_{(s)}$, is classified as

1. an ionic compound
2. a molecular compound
3. a homogeneous mixture
4. a heterogeneous mixture

9 Which phrase describes the molecular polarity and distribution of charge in a molecule of carbon dioxide, CO_2 ?

1. polar and symmetrical
2. polar and asymmetrical
3. nonpolar and symmetrical
4. nonpolar and asymmetrical

10 Which element tends not to react with other elements?

1. helium
2. hydrogen
3. phosphorus
4. potassium

11 Given the equation representing a reaction: $\text{O} + \text{O} \rightarrow \text{O}_2$

Which statement describes the changes that occur as the oxygen molecule is produced?

1. Energy is absorbed as bonds are broken.
2. Energy is absorbed as bonds are formed.
3. Energy is released as bonds are broken.
4. Energy is released as bonds are formed.

12 Which term represents the strength of the attraction an atom has for the electrons in a chemical bond?

1. electrical conductivity
2. electronegativity
3. first ionization energy
4. specific heat capacity

13 Compared to a 15-gram sample of $\text{Cu}_{(s)}$ at 25°C , a 25-gram sample of $\text{Cu}_{(s)}$ at 25°C has

1. the same density and the same chemical properties
2. the same density and different chemical properties
3. a different density and the same chemical properties
4. a different density and different chemical properties

14 Which substance can not be broken down by a chemical change?

1. ammonia
2. ethanol
3. tungsten
4. water

15 The kinetic molecular theory states that all particles of an ideal gas are

1. colliding without transferring energy
2. in random, constant, straight-line motion
3. arranged in a regular geometric pattern
4. separated by small distances relative to their size