

Chemistry Shootout 2005-2006

Test 1

- Physical changes
 - include no change in chemical composition
 - may suggest that a chemical change has also occurred
 - involve formation of new substances
 - a & b
 - a, b & c
- A cube has a mass of 90.0 g and dimensions of 3.0 x 3.0 x 1.0 cm. What is its density?
 - 10.0 g/cm³
 - 1.0 x 10² g/cm³
 - 81 g/cm³
 - 81.0 g/cm³
 - 810 g/cm³
- Oxygen can be found in the gaseous state as oxygen, O₂, and as ozone, O₃. These are
 - isomers
 - isotopes
 - allotropes
 - enantiomers
 - polymers
- (NH₄)₃PO₄ is named
 - nitrogen hydrogen phosphate
 - nitrogen phosphide
 - ammonium phosphide
 - ammonium phosphate
 - triammonium monophosphate
- What is the mass of 20.0 million SO₂ molecules?
 - 2.12 x 10⁻¹⁵ g
 - 1.06 x 10⁻¹⁵ g
 - 6.41 x 10⁶ g
 - 6.41 x 10⁻⁶ g
 - 2.12 x 10⁶ g
- If 15.6 g of C₆H₆ is mixed with excess HNO₃, the product is C₆H₅NO₂. If 18.0 g of product are isolated, what is the percent yield?
 - 78.1 %
 - 73.2 %
 - 55.8 %
 - 92.1 %
 - 37.9 %
- Which of the following is necessary to calculate the molarity of a solution?
 - grams of solute
 - grams of solvent
 - volume of solution
 - a & c
 - b & c
- How many mL of 12.0 M HCl are needed to produce 600 mL of 2.0 M HCl?
 - 1.44 L
 - 100 mL
 - .100 mL
 - 360 mL
 - none of these are correct
- Which of the following is NOT true of the Group VIIA elements?
 - they are called alkaline earth elements
 - they are salt-formers
 - they are highly reactive
 - they have 7 valence electrons
 - all of these are correct
- Which of the following is characteristic of a nonmetal but not of a metal?
 - form ionic bonds with other nonmetals
 - outer shells have 3 or fewer electrons
 - form cations
 - majority are found in the solid state
 - tend to gain electrons in their outer shells

11. Which of the following is LEAST soluble in water?
- NaBr
 - NH_4OH
 - CaCO_3
 - CuSO_4
 - AgNO_3
12. The scientist responsible for the discovery of electrons was
- Rutherford
 - Millikan
 - Thomson
 - Einstein
 - Curie
13. What would the number of neutrons be in a rubidium-88 atom?
- 88
 - 37
 - 85
 - 48
 - 51
14. When light of a sufficiently high energy strikes the surface of a metal, electrons are knocked off the surface. This is
- the first law of thermodynamics
 - the second law of thermodynamics
 - the photoelectric effect
 - the Pauli exclusion principle
 - the Heisenberg uncertainty principle
15. Which of the following atoms would be expected to have the largest atomic radius?
- Br
 - As
 - Ge
 - Ca
 - K
16. The amount of energy needed to remove the most loosely bound electron from an isolated gaseous atom to form an ion with a + 1 charge is the
- electronegativity
 - ionization energy
 - electron affinity
 - tyndall effect
 - none of these are correct
17. Which of the following elements would be expected to have the largest electronegativity value?
- F
 - O
 - B
 - Na
 - There is no way to predict this
18. Which of the following elements would have the greatest ionic character when bonding?
- K & I
 - C & O
 - S & F
 - Al & O
 - Cl & Cl
19. According to the Lewis formula for N_2 , the number of lone pairs of electrons is
- 1
 - 2
 - 3
 - 4
 - 5
20. Which of the following elements is LEAST likely to follow the octet rule when forming compounds?
- carbon
 - silicon
 - oxygen
 - beryllium
 - all follow the octet rule consistently